HUMAN 1V DNA (CD:225-8 [redacted]

GAATAGCCCCCTTTCACTTCTGAGTCCCTGCATGTGCGGGGCTGAAGAAGGAAGCCAGAAGCCTCCTAGCCTCGCCTCCA
CGTTTGCTGAATACCAAGCTGCAGGCGAGCTGCCGGGCGCTTTTCTCTCCTCCAATTCAGAGTAGACAAACCACGGGGAT
TTCTTTCCAGGGTAGGGGAGGGGCCGGGCCCGGGGTCCCAACTCGCACTCAAGTCTTCGCTGCCATGGGGGCCGTCATGG
GCACCTTCTCATCTCTGCAAACCAAACAAAGGCGACCCTCGAAAGATAAGATTGAAGATGAGCTGGAGATGACCATGGTT
TGCCATCGGCCCGAGGGACTGGAGCAGCTCGAGGCCCAGACCAACTTCACCAAGAGGGAGCTGCAGGTCCTTTATCGAGG
CTTCAAAAATGAGTGCCCCAGTGGTGTGGTCAACGAAGACACATTCAAGCAGATCTATGCTCAGTTTTTCCCTCATGGAG
ATGCCAGCACGTATGCCCATTACCTCTTCAATGCCTTCGACACCACTCAGACAGGCTCCGTGAAGTTCGAGGACTTTGTA
ACCGCTCTGTCGATTTTATTGAGAGGAACTGTCCACGAGAAACTAAGGTGGACATTTAATTTGTATGACATCAACAAGGA
CGGATACATAAACAAAGAGGAGATGATGGACATTGTCAAAGCCATCTATGACATGATGGGGAAATACACATATCCTGTGC
TCAAAGAGGACACTCCAAGGCAGCATGTGGACGTCTTCTTCCAGAAAATGGACAAAAATAAAGATGGCATCGTAACTTTA
GATGAATTTCTTGAATCATGTCAGGAGGACGACAACATCATGAGGTCTCTCCAGCTGTTTCAAAATGTCATGTAACTGGT
GACACTCAGCCATTCAGCTCTCAGAGACATTGTACTAAACAACCACCTTAACACCCTGATCTGCCCTTGTTCTGATTTTA
CACACCAACTCTTGGGACAGAAACACCTTTTACACTTTGGAAGAATTCTCTGCTGAAGACTTTCTTATGGAACCCAGCAT
CATGTGGCTCAGTCTCTGATTGCCAACTCTTCCTCTTTCTTCTTCTTGAGAGAGACAAGATGAAATTTGAGTTTGTTTTG
GAAGCATGCTCATCTCCTCACACTGCTGCCCTATGGAAGGTCCCTCTGCTTAAGCTTAAACAGTAGTGCACAAAATATGC
TGCTTACGTGCCCCCAGCCCACTGCCTCCAAGTCAGGCAGACCTTGGTGAATCTGGAAGCAAGAGGACCTGAGCCAGATG
CACACCATCTCTGATGGCCTCCCAAACCAATGTGCCTGTTTCTCTTCCTTTGGTGGGAAGAATGAGAGTTATCCAGAACA
ATTAGGATCTGTCATGACCAGATTGGGAGAGCCAGCACCTAACATATGTGGGATAGGACTGAATTATTAAGCATGACATT
GTCTGATGACCCAAACTGCCCCG

HUMAN 1V PROTEIN

MGAVMGTFSSLQTKQRRPSKDKIEDELEMTMVCHRPEGLEQLEAQTNFTKRELQVLYRGFKNECPSGVVNEDTFKQIYAQ

FFPHGDASTYAHYLFNAFDTTQTGSVKFEDFVTALSILLRGTVHEKLRWTFNLYDINKDGYINKEEMMDIVKAIYDMMGK

YTYPVLKEDTPRQHVDVFFQKMDKNKDGIVTLDEFLESCQEDDNIMRSLQLFQNVM

FIGURE 1

RAT lvN (rlvN) DNA (CD: 339-1037)

GGCACACAACCCCTGGATTCTTCGGAGAATATGCCGTGAGGTGTTGCCAATTATTAGTTCTCTTGGCTAGCAGATGTTTA

GGGACTGGTtaaGCCTTTGGAGAAATTACCTTAGGAAAACGGGGAAATAAAAGCAAAGATTACCATGAATTGCAAGATTA

CCTAGCAATTGCAAGGtagGAGGAGAGAGGTGGAGGGCGGAGTAGACAGGAGGGAGGGAGAAAGtgaGAGGAAGCTAGGC

TGGTGGAAATAACCCTGCACTTGGAACAGCGGCAAAGAAGCGCGATTTTCCAGCTTtaaATGCCTGCCCGCGTTCTGCTT

GCCTACCCGGGAACGGAGATGTTGACCCAGGGCGAGTCTGAAGGGCTCCAGACCTTGGGGATAGTAGTGGTCCTGTGTTC

CTCTCTGAAACTACTGCACTACCTCGGGCTGATTGACTTGTCGGATGACAAGATCGAGGATGATCTGGAGATGACCATGG

TTTGCCATCGGCCTGAGGGACTGGAGCAGCTTGAGGCACAGACGAACTTCACCAAGAGAGAACTGCAAGTCCTTTACCGG

GGATTCAAAAACGAGTGCCCCAGTGGTGTGGTTAACGAAGAGACATTCAAGCAGATCTACGCTCAGTTTTTCCCTCATGG

AGATGCCAGCACATACGCACATTACCTCTTCAATGCCTTCGACACCACCCAGACAGGCTCTGTAAAGTTCGAGGACTTTG

TGACTGCTCTGTCGATTTTACTGAGAGGAACGGTCCATGAAAAACTGAGGTGGACGTTTAATTTGTACGACATCAATAAA

GACGGCTACATAAACAAAGAGGAGATGATGGACATAGTGAAAGCCATCTATGACATGATGGGGAAATACACCTATCCTGT

GCTCAAAGAGGACACTCCCAGGCAGCACGTGGACGTCTTCTTCCAGAAAATGGATAAAAATAAAGATGGCATTGTAACGT

TAGACGAATTTCTCGAGTCCTGTCAGGAGGATGACAACATCATGAGGTCTCTACAGCTGTTCCAAAATGTCATGTAACTG

AGGACACTGGCCATCCTGCTCTCAGAGACACTGACAAACACCTCAATGCCCTGATCTGCCCTTGTTCCAGTTTTACACAT

CAACTCTCGGGACAGAAATACCTTTTACACTTTGGAAGAATTCTCTGCTGAAGACTTTCTACAAAACCTGGCACCGAGTG

GCTCAGTCTCTGATTGCCAACTCTTCCTCCCTCCTCCTCTTGAGAGGGACGAGCTGAAATCCGAAGTTTGTTTTGGAAGC

ATGCCCATCTCTCCATGCTGCTGCTGCCCTGTGGAAGGCCCCTCTGCTTGAGCTTAAACAGTAGTGCACAGTTTTCTGCG

TATACAGATCCCCAACTCACTGCCTCTAAGTCAGGCAGACCCTGATCAATCTGAACCAAATGTGCACCATCCTCCGATGG

CCTCCCAAGCCAATGTGCCTGCTTCTCTTCCTCTGGTGGGAAGAAAGAACGCTCTACAGAGCACTTAGAGCTTACCATGA

AAATACTGGGAGAGGCAGCACCTAACACATGTAGAATAGGACTGAATTATTAAGCATGGTGGTATCAGATGATGCAAACA

GCCCATGTCATTTTTTTTTTCCAGAGGTAGGGACTAATAATTCTCCCACACTAGCACCTACGATCATAGAACAAGTCTTTT

AACACATCCAGGAGGGAAACCGCTGCCCAGTGGTCTATCCCTTCTCTCCATCCCCTGCTCAAGCCCAGCACTGCATGTCT

CTCCCGGAAGGTCCAGAATGCCTGTGAAATGCTGTAACTTTTATACCCTGTTATAATCAATAAACAGAACTATTTCGTAC

AAAAAAAAAAAAAAAA

FIGURE 2

RAT lvN (rlvN) PROTEIN

MLTQGESEGLQTLGIVVVVLCSSLKLLHYLGLIDLSDDKIEDDLEMTMVCHRPEGLEQLEAQTNFTKRELQVLYRGFKNEC

PSGVVNEETFKQIYAQFFPHGDASTYAHYLFNAFDTTQTGSVKFEDFVTALSILLRGTVHEKLRWTFNLYDINKDGYINK

EEMMDIVKAIYDMMGKYTYPVLKEDTPRQHVDVFFQKMDKNKDGIVTLDEFLESCQEDDNIMRSLQLFQNVM.

FIGURE 2 (cont'd)

MOUSE 1V (CD: 477-1127)

CGGCCCCCTGAGATCCAGCCCGAGCGCGGGGCGGAGCGGCCGGGTGGCAGCAGGGGCGGGCGGGCGGAGCGCAGCTCCCG

CACCGCACGCGGCGCGGGCTCGGCAGCCTCGGCCGTGCGGGCACGCCGGCCCCGTGTCCAACATCAGGCAGGCTTTGGGG

CTCGGGGCTCGGGCCTCGGAGAAGCCAGTGGCCCGGCTGGGTGCCCGCACCGGGGGGCGCCTGTCAAGGCTCCCGCGAGC

CTCTGGCCCTGGGAGTCAGTGCATGTGCCTGGCTGAAGAAGGCAGCAGCCACGAGCTCCAGGCGCCCCGGCCCCACGTTT

TCTGAATACCAAGCTGCAGGCGAGCTGCTCGGGGCTTTTTTGCTTTCTCGCTTTTCCTCTCCTCCAATTCAAAGTGGGCA

ATCCACACCGATTTCTTTTCAGGGGAGGGAAGAGACAGGGCCTGGGGTCCCAAGACGCACACAAGTCTTCGCTGCCATGG

GGGCCGTCATGGGCACTTTCTCCTCCCTGCAGACCAAACAAAGGCGACCCTCTAAAGACAAGATTGAGGATGAGCTAGAG

ATGACCATGGTTTGCCACCGGCCTGAGGGACTGGAGCAGCTTGAGGCACAGACGAACTTCACCAAGAGAGAACTGCAAGT

CTTGTACCGGGGATTCAAAAACGAGTGCCCTAGCGGTGTGGTCAATGAAGAAACATTCAAGCAGATCTACGCTCAGTTTT

TCCCTCACGGAGATGCCAGCACATATGCACATTACCTCTTCAATGCCTTCGACACCACCCAGACAGGCTCTGTAAAGTTC

GAGGACTTTGTGACTGCTCTGTCGATTTTACTGAGAGGGACAGTCCATGAAAAACTAAGGTGGACGTTTAATTTGTATGA

CATCAATAAAGACGGCTACATAAACAAAGAGGAGATGATGGACATAGTCAAAGCCATCTATGACATGATGGGGAAATACA

CCTATCCTGTGCTCAAAGAGGACACTCCCAGGCAGCATGTGGATGTCTTCTTCCAGAAAATGGATAAAAATAAAGATGGC

ATTGTAACGTTAGATGAATTTCTTGAATCATGTCAGGAGGATGACAACATCATGAGATCTCTACAGCTGTTCCAAAATGT

CATGTAACTGAGGACACTGGCCATTCTGCTCTCAGAGACACTGACAAACACCTTAATGCCCTGATCTGCCCTTGTTCCAA

TTTTACACACCAACTCTTGGGACAGAAATACCTTTTACACTTTGGAAGAATTCTCTGCTGAAGACTTTCTACAAAACCTG

GCACCACGTGGCTCTGTCTCTGAGGGACGAGCGGAGATCCGACTTTGTTTTGGAAGCATGCCCATCTCTTCATGCTGCTG

CCCTGTGGAAGGCCCCTCTGCTTGAGCTTAATCAATAGTGCACAGTTTTATGCTTACACATATCCCCAACTCACTGCCTC

CAAGTCAGGCAGACTCTGATGAATCTGAGCCAAATGTGCACCATCCTCCGATGGCCTCCCAAGCCAATGTGCCTGCTTCT

CTTCCTCTGGTGGGAAGAAAGAGTGTTCTACGGAACAATTAGAGCTTACCATGAAAATATTGGGAGAGGCAGCACCTAAC

ACATGTAGAATAGGACTGAATTATTAAGCATGGTGATATCAGATGATGCAAATTGCCCATGTCATTTTTTTCAAAGGTAG

GGACAAATGATTCTCCCACACTAGCACCTGTGGTCATAGAGCAAGTCTCTTAACATGCCCAGAAGGGGAACCACTGTCCA

GTGGTCTATCCCTCCTCTCCATCCCCTGCTCAAACCCAGCACTGCATGTCCCTCCAAGAAGGTCCAGAATGCCTGCGAAA

CGCTGTACTTTTATACCCTGTTCTAATCAATAAACAGAACTATTTCGTAAAAAAAAAAAAAAAAAAAA

MOUSE 1V PROTEIN

MGAVMGTFSSLQTKQRRPSKDKIEDELEMTMVCHRPEGLEQLEAQTNFTKRELQVLYRGFKNECPSGVVNEETFKQIYAQ

FFPHGDASTYAHYLFNAFDTTQTGSVKFEDFVTALSILLRGTVHEKLRWTFNLYDINKDGYINKEEMMDIVKAIYDMMGK

YTYPVLKEDTPRQHVDVFFQKMDKNKDGIVTLDEFLESCQEDDNIMRSLQLFQNVM

FIGURE 3

RAT IVL DNA (CD: 31-714)

GTCCCAAGTCGCACACAAGTCTTCGCTGCCATGGGGGCCGTCATGGGTACCTTCTCGTCCCTGCAGACCAAACAAAGGCG

ACCCTCTAAAGACATCGCCTGGTGGTATTACCAGTATCAGAGAGACAAGATCGAGGATGATCTGGAGATGACCATGGTTT

GCCATCGGCCTGAGGGACTGGAGCAGCTTGAGGCACAGACGAACTTCACCAAGAGAGAACTGCAAGTCCTTTACCGGGGA

TTCAAAAACGAGTGCCCCAGTGGTGTGGTTAACGAAGAGACATTCAAGCAGATCTACGCTCAGTTTTTCCCTCATGGAGA

TGCCAGCACATACGCACATTACCTCTTCAATGCCTTCGACACCACCCAGACAGGCTCTGTAAAGTTCGAGGACTTTGTGA

CTGCTCTGTCGATTTTACTGAGAGGAACGGTCCATGAAAAACTGAGGTGGACGTTTAATTTGTACGACATCAATAAAGAC

GGCTACATAAACAAAGAGGAGATGATGGACATAGTGAAAGCCATCTATGACATGATGGGGAAATACACCTATCCTGTGCT

CAAAGAGGACACTCCCAGGCAGCACGTGGACGTCTTCTTCCAGAAAATGGATAAAAATAAAGATGGCATTGTAACGTTAG

ACGAATTTCTCGAGTCCTGTCAGGAGGATGACAACATCATGAGGTCTCTACAGCTGTTCCAAAATGTCATGTAACTGAGG

ACACTGGCCATCCTGCTCTCAGAGACACTGACAAACACCTCAATGCCCTGATCTGCCCTTGTTCCAGTTTTACACATCAA

CTCTCGGGACAGAAATACCTTTTACACTTTGGAAGAATTCTCTGCTGAAGACTTTCTACAAAACCTGGCACCGCGTGGCT

CAGTCTCTGATTGCCAACTCTTCCTCCCTCCTCCTCTTGAGAGGGACGAGCTGAAATCCGAAGTTTGTTTTGGAAGCATG

CCCATCTCTCCATGCTGCTGCTGCCCTGTGGAAGGCCCCTCTGCTTGAGCTTAAACAGTAGTGCACAGTTTTCTGCGTAT

ACAGATCCCCAACTCACTGCCTCTAAGTCAGGCAGACCCTGATCAATCTGAACCAAATGTGCACCATCCTCCGATGGCCT

CCCAAGCCAATGTGCCTGCTTCTCTTCCTCTGGTGGGAAGAAAGAACGCTCTACAGAGCACTTAGAGCTTACCATGAAAA

TACTGGGAGAGGCAGCACCTAACACATGTAGAATAGGACTGAATTATTAAGCATGGTGGTATCAGATGATGCAAACAGCC

CATGTCATTTTTTTTCCAGAGGTAGGGACTAATAATTCTCCCACACTAGCACCTACGATCATAGAACAAGTCTTTTAACA

CATCCAGGAGGGAAACCGCTGCCCAGTGGTCTATCCCTTCTCTCCATCCCCTGCTCAAGCCCAGCACTGCATGTCTCTCC

CGGAAGGTCCAGAATGCCTGTGAAATGCTGTAACTTTTATACCCTGTTATAATCAATAAACAGAACTATTTCGTACAAAA

AAAAAAAAAAAAAA

RAT IVL PROTEIN

MGAVMGTFSSLQTKQRRPSKDIAWWYYQYQRDKIEDDLEMTMVCHRPEGLEQLEAQTNFTKRELQVLYRGFKNECPSGVV

NEETFKQIYAQFFPHGDASTYAHYLFNAFDTTQTGSVKFEDFVTALSILLRGTVHEKLRWTFNLYDINKDGYINKEEMMD

IVKAIYDMMGKYTYPVLKEDTPRQHVDVFFQKMDKNKDGIVTLDEFLESCQEDDNIMRSLQLFQNVM.

FIGURE 4

MOUSE IVL DNA (CD: 77-760)

ATCCACACCGATTTCTTTTCAGGGGAGGGAAGAGACAGGGCCTGGGGTCCCAAGACGCACACAAGTCTTCGCTGCCATGG

GGGCCGTCATGGGCACTTTCTCCTCCCTGCAGACCAAACAAAGGCGACCCTCTAAAGACATCGCCTGGTGGTATTACCAG

TATCAGAGAGACAAGATTGAGGATGAGCTAGAGATGACCATGGTTTGCCACCGGCCTGAGGGACTGGAGCAGCTTGAGGC

ACAGACGAACTTCACCAAGAGAGAACTGCAAGTCTTGTACCGGGGATTCAAAAACGAGTGCCCTAGCGGTGTGGTCAATG

AAGAAACATTCAAGCAGATCTACGCTCAGTTTTTCCCTCACGGAGATGCCAGCACATATGCACATTACCTCTTCAATGCC

TTCGACACCACCCAGACAGGCTCTGTAAAGTTCGAGGACTTTGTGACTGCTCTGTCGATTTTACTGAGAGGGACAGTCCA

TGAAAAACTAAGGTGGACGTTTAATTTGTATGACATCAATAAAGACGGCTACATAAACAAAGAGGAGATGATGGACATAG

TCAAAGCCATCTATGACATGATGGGGAAATACACCTATCCTGTGCTCAAAGAGGACACTCCCAGGCAGCATGTGGATGTC

TTCTTCCAGAAAATGGATAAAAATAAAGATGGCATTGTAACGTTAGATGAATTTCTTGAATCATGTCAGGAGGATGACAA

CATCATGAGATCTCTACAGCTGTTCCAAAATGTCATGTAACTGAGGACACTGGCCATTCTGCTCTCAGAGACACTGACAA

ACACCTTAATGCCCTGATCTGCCCTTGTTCCAATTTTACACACCAACTCTTGGGACAGAAATACCTTTTACACTTTGGAA

GAATTCTCTGCTGAAGACTTTCTACAAAACCTGGCACCACGTGGCTCTGTCTCTGAGGGACGAGCGGAGATCCGACTTTG

TTTTGGAAGCATGCCCATCTCTTCATGCTGCTGCCCTGTGGAAGGCCCCTCTGCTTGAGCTTAATCAATAGTGCACAGTT

TTATGCTTACACATATCCCCAACTCACTGCCTCCAAGTCAGGCAGACTCTGATGAATCTGAGCCAAATGTGCACCATCCT

CCGATGGCCTCCCAAGCCAATGTGCCTGCTTCTCTTCCTCTGGTGGGAAGAAAGAGTGTTCTACGGAACAATTAGAGCTT

ACCATGAAAATATTGGGAGAGGCAGCACCTAACACATGTAGAATAGGACTGAATTATTAAGCATGGTGATATCAGATGAT

GCAAATTGCCCATGTCATTTTTTTCAAAGGTAGGGACAAATGATTCTCCCACACTAGCACCTGTGGTCATAGAGCAAGTC

TCTTAACATGCCCAGAAGGGGAACCACTGTCCAGTGGTCTATCCCTCCTCTCCATCCCCTGCTCAAACCCAGCACTGCAT

GTCCCTCCAAGAAGGTCCAGAATGCCTGCGAAACGCTGTACTTTTATACCCTGTTCTAATCAATAAACAGAACTATTTCG

TACAAAAAAAAAAAAAAAAAA

MOUSE IVL PROTEIN

MGAVMGTFSSLQTKQRRPSKDIAWWYYQYQRDKIEDELEMTMVCHRPEGLEQLEAQTNFTKRELQVLYRGFKNECPSGVV

NEETFKQIYAQFFPHGDASTYAHYLFNAFDTTQTGSVKFEDFVTALSILLRGTVHEKLRWTFNLYDINKDGYINKEEMMD

IVKAIYDMMGKYTYPVLKEDTPRQHVDVFFQKMDKNKDGIVTLDEFLESCQEDDNIMRSLQLFQNVM.

FIGURE 5

RAT IVN DNA (FIRST-PASS, PARTIAL; CD: 345-955)
GTCCGGGCACACAACCCCTGGATTCTTCGGAGAATATGCCGTGACGGTGTTGCCAATTATTAGTTCTCTTGGCTAGCAGA

TGTTTAGGGACTGGTTAAGCCTTTGGAGAAATTACCTTAGGAAAACGGGGAAATAAAAGCAAAGATTACCATGAATTGCA

AGATTACCTAGCAATTGCAAGGTAGGAGGAGAGAGGTGGAGGGCGGAGTAGACAGGAGGGAGGGAGAAAGTGAGAGGAAG

CTAGGCTGGTGGAAATAACCCTGCACTTGGAACAGCGGCAAAGAAGCGCGATTTTCCAGCTTTAAATGCCTGCCCGCGTT

CTGCTTGCCTACCCGGGAACGGAGATGTTGACCCAGGGCGAGTCTGAAGGGCTCCAGACCTTGGGGATAGTAGTGGTCCT

GTGTTCCTCTCTGAAACTACTGCACTACCTCGGGCTGATTGACTTGTCGGATGACAAGATCGAGGATGATCTGGAGATGA

CCATGGTTTGCCATCGGCCTGAGGGACTGGAGCAGCTTGAGGCACAGACGAACTTCACCAAGAGAGAACTGCAAGTCCTT

TACCGGGGATTCAAAAACGAGTGCCCCAGTGGTGTGGTTAACGAAGAGACATTCAAGCNGATCTACGCTCAGTTTTTCCC

TCATGGAGATGCCAGCACATACGCACATTACCTCTTCAATGCCTTCGACACCACCCAGACAGGCTCTGTAAAGTTCGAGG

ACTTTGTGACTGCTCTGTCGATTTTACTGAGAGGAACGGTCCATGAAAAACTGAAGTGGACGTTTAATTTGTACGACATC

AATAAAGACGGCTACATAAACAAAGAGGAGATGATGGACATAGTGAAAGCCATCTATGACATGATGGGGAAATACACCTA

TCTTGTGCTCAAAGAGGACACTTCCAGGCAGCACGTGGACGTCTTCTTCCAGAAAATGGATAAAAATAAAGATGG

RAT IVN PROTEIN (PARTIAL)
MLTQGESEGLQTLGIVVVLCSSLKLLHYLGLIDLSDDKIEDDLEMTMVCHRPEGLEQLEAQTNFTKRELQVLYRGFKNEC

PSGVVNEETFKXIYAQFFPHGDASTYAHYLFNAFDTTQTGSVKFEDFVTALSILLRGTVHEKLKWTFNLYDINKDGYINK

EEMMDIVKAIYDMMGKYTYLVLKEDTSRQHVDVFFQKMDKNKD

FIGURE 6

HUMAN 9QL DNA (CD:207-1019)

CTCACCTGCTGCCTAGTGTTCCCTCTCCTGCTCCAGGACCTCCGGGTAGACCTCAGACCCCGGGCCCATTCCCAGACTCA

GCCTCAGCCCGGACTTCCCCAGCCCCGACAGCACAGTAGGCCGCCAGGGGGCGCCGTGTGAGCGCCCTATCCCGGCCACC

CGGCGCCCCCTCCCACGGCCCGGGCGGGAGCGGGGCGCCGGGGGCCATGCGGGGCCAGGGCCGCAAGGAGAGTTTGTCCG

ATTCCCGAGACCTGGACGGCTCCTACGACCAGCTCACGGGCCACCCTCCAGGGCCCACTAAAAAAGCGCTGAAGCAGCGA

TTCCTCAAGCTGCTGCCGTGCTGCGGGCCCCAAGCCCTGCCCTCAGTCAGTGAAACATTAGCCGCCCCAGCCTCCCTCCG

CCCCCACAGACCCCGCCTGCTGGACCCAGACAGCGTGGACGATGAATTTGAATTGTCCACCGTGTGTCACCGGCCTGAGG

GTCTGGAGCAGCTGCAGGAGCAAACCAAATTCACGCGCAAGGAGTTGCAGGTCCTGTACCGGGGCTTCAAGAACGAATGT

CCCAGCGGAATTGTCAATGAGGAGAACTTCAAGCAGATTTACTCCCAGTTCTTTCCTCAAGGAGACTCCAGCACCTATGC

CACTTTTCTCTTCAATGCCTTTGACACCAACCATGATGGCTCGGTCAGTTTTGAGGACTTTGTGGCTGGTTTGTCCGTGA

TTCTTCGGGGAACTGTAGATGACAGGCTTAATTGGGCCTTCAACCTGTATGACCTTAACAAGGACGGCTGCATCACCAAG

GAGGAAATGCTTGACATCATGAAGTCCATCTATGACATGATGGGCAAGTACACGTACCCTGCACTCCGGGAGGAGGCCCC

AAGGGAACACGTGGAGAGCTTCTTCCAGAAGATGGACAGAAACAAGGATGGTGTGGTGACCATTGAGGAATTCATTGAGT

CTTGTCAAAAGGATGAGAACATCATGAGGTCCATGCAGCTCTTTGACAATGTCATCTAGCCCCCAGGAGAGGGGGTCAGT

GTTTCCTGGGGGGACCATGCTCTAACCCTAGTCCAGGCGGACCTCACCCTTCTCTTCCCAGGTCTATCCTCATCCTACGC

CTCCCTGGGGGCTGGAGGGATCCAAGAGCTTGGGGATTCAGTAGTCCAGATCTCTGGAGCTGAAGGGGCCAGAGAGTGGG

CAGAGTGCATCTCGGGGGGTGTTCCCAACTCCCACCAGCTCTCACCCCCTTCCTGCCTGACACCCAGTGTTGAGAGTGCC

CCTCCTGTAGGAATTGAGCGGTTCCCCACCTCCTACCCTACTCTAGAAACACACTAGAGCGATGTCTCCTGCTATGGTGC

TTCCCCCATCCCTGACCTCATAAACATTTCCCCTAAGACTCCCCTCTCAGAGAGAATGCTCCATTCTTGGCACTGGCTGG

CTTCTCAGACCAGCCATTGAGAGCCCTGTGGGAGGGGGACAAGAATGTATAGGGAGAAATCTTGGGCCTGAGTCAATGGA

TAGGTCCTAGGAGGTGGGTGGGGTTGAGAATAGAAGGGCCTGGACAGATTATGATTGCTCAGGCATACCAGGTTATAGCT

CCAAGTTCCACAGGTCTGCTACCACAGGCCATCAAAATATAAGTTTCCAGGCTTTGCAGAAGACCTTGTCTCCTTAGAAA

TGCCCCAGAAATTTTCCACACCCTCCTCGGTATCCATGGAGAGCCTGGGGCCAGATATCTGGCTCATCTCTGGCATTGCT

TCCTCTCCTTCCTTCCTGCATGTGTTGGTGGTGGTTGTGGTGGGGGAATGTGGATGGGGGATGTCCTGGCTGATGCCTGC

CAAAATTTCATCCCACCCTCCTTGCTTATCGTCCCTGTTTTGAGGGCTATGACTTGAGTTTTTGTTTCCCATGTTCTCTA

TAGACTTGGGACCTTCCTGAACTTGGGGCCTATCACTCCCCACAGTGGATGCCTTAGAAGGGAGAGGGAAGGAGGGAGGC

AGGCATAGC

FIGURE 7

HUMAN 9QL PROTEIN

MRGQGRKESLSDSRDLDGSYDQLTGHPPGPTKKALKQRFLKLLPCCGPQALPSVSETLAAPASLRPHRPRLLDPDSVDDE

FELSTVCIPSFGLEQLQEQTKFTRKELQVLYRGFKNECPSGIVNEENFKQIYSQFFPQGDSSTYATFLFNAFDTNHDGSV

SFEDFVAGLSVILRGTVDDRLNWAFNLYDLNKDGCITKEEMLDIMKSIYDMMGKYTYPALREEAPREHVESFFQKMDRNK

DGVVTIEEFIESCQKDENIMRSMQLFDNVI

FIGURE 7 (cont'd)

RAT 9QL DNA (PARTIAL; CD: 2-775)

CCGAGATCTGGACGGCTCCTATGACCAGCTTACGGGCCACCCTCCAGGGCCCAGTAAAAAAGCCCTGAAGCAGCGTTTCC

TCAAGCTGCTGCCGTGCTGCGGGCCCCAAGCCCTGCCCTCAGTCAGTGAAACATTAGCTGCCCCAGCCTCCCTCCGCCCC

CACAGACCCCGCCCGCTGGACCCAGACAGCGTAGAGGATGAGTTTGAATTATCCACGGTGTGTCACCGACCTGAGGGCCT

GGAACAACTCCAGGAACAGACCAAGTTCACACGCAGAGAGCTGCAGGTCCTGTACCGAGGCTTCAAGAACGAATGCCCCA

GTGGGATTGTCAACGAGGAGAACTTCAAGCAGATTTATTCTCAGTTCTTTCCCCAAGGAGACTCCAGCAACTATGCTACT

TTTCTCTTCAATGCCTTTGACACCAACCACGATGGCTCTGTCAGTTTTGAGGACTTTGTGGCTGGTTTGTCGGTGATTCT

TCGGGGGACCATAGATGATAGACTGAGCTGGGCTTTCAACTTATATGACCTCAACAAGGACGGCTGTATCACAAAGGAGG

AAATGCTTGACATTATGAAGTCCATCTATGACATGATGGGCAAGTACACATACCCTGCCCTCCGGGAGGAGGCCCCAAGA

GAACACGTGGAGAGCTTCTTCCAGAAGATGGACAGGAACAAGGACGGCGTGGTGACCATCGAGGAATTCATCGAGTCTTG

TCAACAGGACGAGAACATCATGAGGTCCATGCAGCTCTTTGATAATGTCATCTAGCTCCCCAGGGAGAGGGGTTAGTGTG

TCCTAGGGTGACCAGGCTGTAGTCCTAGTCCAGACGAACCTAACCCTCTCTCTCCAGGCCTGTCCTCATCTTACCTGTAC

CCTGGGGGGCTGTAGGGATTCAATATCCTGGGGCTTCAGTAGTCCAGATCCCTGAGCTAAGTCACAAAAGTAGGCAAGAGT

AGGCAAGCTAAATCTGGGGGCTTCCCAACCCCCGACAGCTCTCACCCCTTCTCAACTGATACCTAGTGCTGAGGACACCC

CTGGTGTAGGGACCAAGTGGTTCTCCACCTTCTAGTCCCACTCTAGAAACCACATTAGACAGAAGGTCTCCTGCTATGGT

GCTTTCCCCATCCCTAATCTCTTAGATTTTCCTCAAGACTCCCTTCTCAGAGAACACGCTCTGTCCATGTCCCCAGCTGG

GGACATGGACAGAGCGTGTTCTCTAGTTCTAGATCGCGAGCGGCCGC

RAT 9QL PROTEIN (PARTIAL)

RDLDGSYDQLTGHPPGPSKKALKQRFLKLLPCCGPQALPSVSETLAAPASLRPHRPRPLDPDSVEDEFELSTVCHRPEGL

EQLQEQTKFTRRELQVLYRGFKNECPSGIVNEENFKQIYSQFFPQGDSSNYATFLFNAFDTNHDGSVSFEDFVAGLSVIL

RGTIDDRLSWAFNLYDLNKDGCITKEEMLDIMKSIYDMMGKYTYPALREEAPREHVESFFQKMDRNKDGVVTIEEFIESC

QQDENIMRSMQLFDNVI.

FIGURE 8

MOUSE 9QL DNA (CD: 181-993)

CGGGACTCTGAGGTGGGCCCTAAAATCCAGCGCTCCCCAGAGAAAAGCCTTGCCAGCCCCTACTCCCGGCCCCCAGCCCC

AGCAGGTCGCTGCGCCGCCAGGGGGCACTGTGTGAGCGCCCTATCCTGGCCACCCGGCGCCCCCTCCCACGGCCCAGGCG

GGAGCGGGGCGCCGGGGGCCATGCGGGGCCAAGGCCGAAAGGAGAGTTTGTCCGAATCCCGAGATTTGGACGGCTCCTAT

GACCAGCTTACGGGCCACCCTCCAGGGCCCAGTAAAAAAGCCCTGAAGCAGCGTTTCCTCAAGCTGCTGCCGTGCTGCGC

GCCCCAAGCCCTGCCCTCAGTCAGTGAAACATTAGCTGCCCCAGCCTCCCTCCGCCCCCACAGACCCCGCCCGCTGGACC

CAGACAGCGTGGAGGATGAGTTTGAACTATCCACGGTGTGCCACCGGCCTGAGGGTCTGGAACAACTCCAGGAACAAACC

AAGTTCACACGCAGAGAGTTGCAGGTCCTGTACAGAGGCTTCAAGAACGAATGTCCCAGCGGAATTGTCAACGAGGAGAA

CTTCAAGCAAATTTATTCTCAGTTCTTTCCCCAAGGAGACTCCAGCAACTACGCTACTTTTCTCTTCAATGCCTTTGACA

CCAACCATGATGGCTCTGTCAGTTTTGAGGACTTTGTGGCTGGTTTGTCAGTGATTCTTCGGGGAACCATAGATGATAGA

CTGAACTGGGCTTTCAACTTATATGACCTCAACAAGGATGGCTGTATCACGAAGGAGGAAATGCTCGACATCATGAAGTC

CATCTATGACATGATGGGCAAGTACACCTACCCTGCCCTCCGGGAGGAGGCCCCGAGGGAACACGTGGAGAGCTTCTTCC

AGAAGATGGACAGAAACAAGGACGGCGTGGTGACCATTGAGGAATTCATTGAGTCTTGTCAACAGGACGAGAACATCATG

AGGTCCATGCAACTCTTTGATAATGTCATCTAGCTCCCCAGGGAGAGGGGTTAGTGTGTCCCAGGGTAACCATGCTGTAG

CCCTAGTCCAGGCAAACCTAACCCTCCTCTCCCCGGGTCTGTCCTCATCCTACCTGTACCCTGGGGGCTGTAGGGATTCA

ACATCCTGGCGCTTCAGTAGTCCAGATCCCTGAGCTAAGTGGCGAGAGTAGGCAAGCTAAGTCTTTGGAGGGTGGGTGGG

GGCGCGCAGATTCCCAACCCCCGACGACTCTCACCCCTTTCTCGACTGATACCCAGTGCTGAGGCTACCCCTGGTGTCGG

GAACGACCAAAGTGGTTCTCTGCCTCCCCAGCCCACTCTAGAGACCCACACTAGACGGGAATATCTCCTGCTATGGTGCT

TTCCCCATCCCTGACCGCAGATTTTCCTCCTAAGACTCCCTTCTCAGAGAATATGCTTTTGTCCCTTGTCCCTGGCTGGC

TTTTCAGCCTAGCCTTTGAGGACCCTGTGGGAGGGGAGAATAAGAAAGCAGACAAAATCTTGGCCCTGAGCCAGTGGTTA

GGTCCTAGGAATCAGGCTGGAGTGGAGACCAGAAAGCCTGGGCAGGCTATGAGAGCCCCAGGTTGGCTTGTCACCGCCAG

GTTCCACAGGGCTGCTGCTCTGGGTCAGCAGAGTATGAGTTTCCAGACTTTCCAGAAGGCCTTATGTCCTTAGCAATGTC

CCAGAAATTCACCATACACTTCTCAGTGTCTTAGGATCCAGATGTCCGGTCCATCCCTGAAACCTCTCCCTCCTCCTTGC

TCCTATGGTGGGAGTGGTGGCCAGGGGACGATGAGTGAGCCGGTGTCCTGGATGATGCCTGTCAAGGTCCCACCTACCCT

CCGGCTGTCAAGCCGTTCTGGTGACCCTGTTTGATTCTCCATGACCCCTGTCTAGATGTAGAGGTGTGGAGTGAGTCTAG

TGGCAGCCTTAGGGGAATGGGAAGAACGAGAGGGGCACTCCATCTGAACCCAGTGTGGGGGCATCCATTCGAATCTTTGC

CTGGCTCCCCACAATGCCCTAGGATCCTCTAGGGTCCCCACCCCCACTCTTTAGTCTACCCAGAGATGCTCCAGAGCTCA

CCTAGAGGGCAGGGACCATAGGATCCAGGTCCAACCTGTCATCAGCATCCGGCCATGCTGCTGCTGCTTATTAATAAACC

TGCTTGTCGTTCAGCGCCCCTTCCCAGTCAGCCAGGGTCTGAGGGGAAGGCCCCCACTTTCCCGCCTCCTGTCAGACATT

GTTGACTGCTTTGCATTTTGGGCTCTTCTACCTATATTTTGTATAATAAGAAAGACACCAGATCCAATAAAACACATGGC

TATGCACAAAAAAAAAAAAAAAA

MOUSE 9QL PROTEIN

MRGQGRKESLSESRDLDGSYDQLTGHPPGPSKKALKQRFLKLLPCCGPQALPSVSETLAAPASLRPHRPRPLDPDSVEDE

FELSTVCHRPEGLEQLQEQTKFTRRELQVLYRGFKNECPSGIVNEENFKQIYSQFFPQGDSSNYATFLFNAFDTNHDGSV

SFEDFVAGLSVILRGTIDDRLNWAFNLYDLNKDGCITKEEMLDIMKSIYDMMGKYTYPALREEAPREHVESFFQKMDRNK

DGVVTIEEFIESCQQDENIMRSMQLFDNVI

FIGURE 9

HUMAN 9QM DNA (CD: 207-965)

CTCACCTGCTGCCTAGTGTTCCCTCTCCTGCTCCAGGACCTCCGGGTAGACCTCAGACCCCGGGCCCATTCCCAGACTCA

GCCTCAGCCCGGACTTCCCCAGCCCCGACAGCACAGTAGGCCGCCAGGGGGCGCCGTGTGAGCGCCCTATCCCGGCCACC

CGGCGCCCCCTCCCACGGCCCGGGCGGGAGCGGGGCGCCGGGGGCCATGCGGGGCCAGGGCCGCAAGGAGAGTTTGTCCG

ATTCCCGAGACCTGGACGGCTCCTACGACCAGCTCACGGGCCACCCTCCAGGGCCCACTAAAAAAGCGCTGAAGCAGCGA

TTCCTCAAGCTGCTGCCGTGCTGCGGGCCCCAAGCCCTGCCCTCAGTCAGTGAAAACAGCGTGGACGATGAATTTGAATT

GTCCACCGTGTGTCACCGGCCTGAGGGTCTGGAGCAGCTGCAGGAGCAAACCAAATTCACGCGCAAGGAGTTGCAGGTCC

TGTACCGGGGCTTCAAGAACGAATGTCCCAGCGGAATTGTCAATGAGGAGAACTTCAAGCAGATTTACTCCCAGTTCTTT

CCTCAAGGAGACTCCAGCACCTATGCCACTTTTCTCTTCAATGCCTTTGACACCAACCATGATGGCTCGGTCAGTTTTGA

GGACTTTGTGGCTGGTTTGTCCGTGATTCTTCGGGGAACTGTAGATGACAGGCTTAATTGGGCCTTCAACCTGTATGACC

TTAACAAGGACGGCTGCATCACCAAGGAGGAAATGCTTGACATCATGAAGTCCATCTATGACATGATGGGCAAGTACACG

TACCCTGCACTCCGGGAGGAGGCCCCAAGGGAACACGTGGAGAGCTTCTTCCAGAAGATGGACAGAAACAAGGATGGTGT

GGTGACCATTGAGGAATTCATTGAGTCTTGTCAAAAGGATGAGAACATCATGAGGTCCATGCAGCTCTTTGACAATGTCA

TCTAGCCCCCAGGAGAGGGGGTCAGTGTTTCCTGGGGGGACCATGCTCTAACCCTAGTCCAGGCGGACCTCACCCTTCTC

TTCCCAGGTCTATCCTCATCCTACGCCTCCCTGGGGGCTGGAGGGATCCAAGAGCTTGGGGATTCAGTAGTCCAGATCTC

TGGAGCTGAAGGGGCCAGAGAGTGGGCAGAGTGCATCTCGGGGGGTGTTCCCAACTCCCACCAGCTCTCACCCCCTTCCT

GCCTGACACCCAGTGTTGAGAGTGCCCCTCCTGTAGGAATTGAGCGGTTCCCCACCTCCTACCCTACTCTAGAAACACAC

TAGAGCGATGTCTCCTGCTATGGTGCTTCCCCCATCCCTGACCTCATAAACATTTCCCCTAAGACTCCCCTCTCAGAGAG

AATGCTCCATTCTTGGCACTGGCTGGCTTCTCAGACCAGCCATTGAGAGCCCTGTGGGAGGGGGACAAGAATGTATAGGG

AGAAATCTTGGGCCTGAGTCAATGGATAGGTCCTAGGAGGTGGGTGGGGTTGAGAATAGAAGGGCCTGGACAGATTATGA

TTGCTCAGGCATACCAGGTTATAGCTCCAAGTTCCACAGGTCTGCTACCACAGGCCATCAAAATATAAGTTTCCAGGCTT

TGCAGAAGACCTTGTCTCCTTAGAAATGCCCCAGAAATTTTCCACACCCTCCTCGGTATCCATGGAGAGCCTGGGGCCAG

ATATCTGGCTCATCTCTGGCATTGCTTCCTCTCCTTCCTTCCTGCATGTGTTGGTGGTGGTTGTGGTGGGGGAATGTGGA

TGGGGGATGTCCTGGCTGATGCCTGCCAAAATTTCATCCCACCCTCCTTGCTTATCGTCCCTGTTTTGAGGGCTATGACT

TGAGTTTTTGTTTCCCATGTTCTCTATAGACTTGGGACCTTCCTGAACTTGGGGCCTATCACTCCCCACAGTGGATGCCT

TAGAAGGGAGAGGGAAGGAGGGAGGCAGGCATAGC

FIGURE 10

HUMAN 9QM PROTEIN

MRGQGRKESLSDSRDLDGSYDQLTGHPPGPTKKALKQRFLKLLPCCGPQALPSVSENSVDDEFELSTVCHRPEGLEQLQE

QTKFTRKELQVLYRGFKNECPSGIVNEENFKQIYSQFFPQGDSSTYATFLFNAFDTNHDGSVSFEDFVAGLSVILRGTVD

DRLNWAFNLYDLNKDGCITKEEMLDIMKSIYDMMGKYTYPALREEAPREHVESFFQKMDRNKDGVVTIEEFIESCQKDEN

IMRSMQLFDNVI

FIGURE 10 (cont'd)

RAT 9QM DNA (CD: 214-972)

CTCACTTGCTGCCCAAGGCTCCTGCTCCTGCCCCAGGACTCTGAGGTGGGCCCTAAAACCCAGCGCTCTCTAAAGAAAAG

CCTTGCCAGCCCCTACTCCCGGCCCCCAACCCCAGCAGGTCGCTGCGCCGCCAGGGGGCGCTGTGTGAGCGCCCTATTCT

GGCCACCCGGCGCCCCCTCCCACGGCCCAGGCGGGAGCGGGGCGCCGGGGGCCATGCGGGGCCAAGGCAGAAAGGAGAGT

TTGTCCGAATCCCGAGATCTGGACGGCTCCTATGACCAGCTTACGGGCCACCCTCCAGGGCCCAGTAAAAAAGCCCTGAA

GCAGCGTTTCCTCAAGCTGCTGCCGTGCTGCGGGCCCCAAGCCCTGCCCTCAGTCAGTGAAAACAGCGTAGAGGATGAGT

TTGAATTATCCACGGTGTGTCACCGACCTGAGGGCCTGGAACAACTCCAGGAACAGACCAAGTTCACACGCAGAGAGCTG

CAGGTCCTGTACCGAGGCTTCAAGAACGAATGCCCCAGTGGGATTGTCAACGAGGAGAACTTCAAGCAGATTTATTCTCA

GTTCTTTCCCCAAGGAGACTCCAGCAACTATGCTACTTTTCTCTTCAATGCCTTTGACACCAACCACGATGGCTCTGTCA

GTTTTGAGGACTTTGTGGCTGGTTTGTCGGTGATTCTTCGGGGGACCATAGATGATAGACTGAGCTGGGCTTTCAACTTA

TATGACCTCAACAAGGACGGCTGTATCACAAAGGAGGAAATGCTTGACATTATGAAGTCCATCTATGACATGATGGGCAA

GTACACATACCCTGCCCTCCGGGAGGAGGCCCCAAGAGAACACGTGGAGAGCTTCTTCCAGAAGATGGACAGGAACAAGG

ACGGCGTGGTGACCATCGAGGAATTCATCGAGTCTTGTCAACAGGACGAGAACATCATGAGGTCCATGCAGCTCTTTGAT

AATGTCATCTAGCTCCCCAGGGAGAGGGGTTAGTGTGTCCTAGGGTGACCAGGCTGTAGTCCTAGTCCAGACGAACCTAA

CCCTCTCTCTCCAGGCCTGTCCTCATCTTACCTGTACCCTGGGGGCTGTAGGGATTCAATATCCTGGGGCTTCAGTAGTC

CAGATCCCTGAGCTAAGTCACAAAAGTAGGCAAGAGTAGGCAAGCTAAATCTGGGGGCTTCCCAACCCCCGACAGCTCTC

ACCCCTTCTCAACTGATACCTAGTGCTGAGGACACCCCTGGTGTAGGGACCAAGTGGTTCTCCACCTTCTAGTCCCACTC

TAGAAACCACATTAGACAGAAGGTCTCCTGCTATGGTGCTTTCCCCATCCCTAATCTCTTAGATTTTCCTCAAGACTCCC

TTCTCAGAGAACACGCTCTGTCCATGTCCCCAGCTGGCTTCTCAGCCTAGCCTTTGAGGGCCCTGTGGGGAGGCGGGGAC

AAGAAAGCAGAAAAGTCTTGGCCCCGAGCCAGTGGTTAGGTCCTAGGAATTGGCTGGAGTGGAGGCCAGAAAGCCTGGGC

AGATGATGAGAGCCCAGCTGGGCTGTCACTGCAGGTTCCGGGGCCTACAGCCCTGGGTCAGCAGAGTATGAGTTCCCAGA

CTTTCCAGAAGGTCCTTAGCAATGTCCCAGAAATTCACCGTACACTTCTCAGTGTCTTAGGAGGGCCCGGGATCCAGATG

TCTGGTTCATCCCTGAATCCTCTCCCTCCTTCTTGCTCGTATGGTGGGAGTGGTGGCCAGGGGAAGATGAGTGGTGTCCC

GGATGATGCCTGTCAAGGTCCCACCTCCCCTCCGGCTGTTCTCATGACAGCTGTTTGGTTCTCCATGACCCCTATCTAGA

TGTAGAGGCATGGAGTGAGTCAGGGATTTCCCGAACTTGAGTTTTACCACTCCTCCTAGTGGCTGCCTTAGGGGAATGGG

AAGAACCCAGTGTGGGGGCACCCATTAGAATCTTTGCCCGGCTCCTCACAATGCCCTAGGGTCCCCTAGGGTACCCGCTC

CCTCTGTTTAGTCTACCCAGAGATGCTCCTGAGCTCACCTAGAGGGTAGGGACGGTAGGCTCCAGGTCCAACCTCTCCAG

GTCAGCACCCTGCCATGCTGCTGCTCCTCATTAACAAACCTGCTTGTCTCCTCCTGCGCCCCTTCTCAGTCAGCCAGGGT

CTGAGGGGAAGGGCCTCCCGTTTCCCCATCCGTCAGACATGGTTGACTGCTTTGCATTTTGGGCTCTTCTATCTATTTTG

TAAAATAAGACATCAGATCCAATAAAACACACGGCTATGCACAAAAAAAAAAAAAAAAAA

RAT 9QM PROTEIN

MRGQGRKESLSESRDLDGSYDQLTGHPPGPSKKALKQRFLKLLPCCGPQALPSVSENSVEDEFELSTVCHRPEGLEQLQE

QTKFTRRELQVLYRGFKNECPSGIVNEENFKQIYSQFFPQGDSSNYATFLFNAFDTNHDGSVSFEDFVAGLSVILRGTID

DRLSWAFNLYDLNKDGCITKEEMLDIMKSIYDMMGKYTYPALREEAPREHVESFFQKMDRNKDGVVTIEEFIESCQQDEN

IMRSMQLFDNVI

FIGURE 11

HUMAN 9QS DNA (CD:207-869)

CTCACCTGCTGCCTAGTGTTCCCTCTCCTGCTCCAGGACCTCCGGGTAGACCTCAGACCCCGGGCCCATTCCCAGACTCA

GCCTCAGCCCGGACTTCCCCAGCCCCGACAGCACAGTAGGCCGCCAGGGGGCGCCGTGTGAGCGCCCTATCCCGGCCACC

CGGCGCCCCCTCCCACCGCCCCGGGCGGGAGCGGGGCGCCGGGGGCCATGCGGGGCCAGGGCCGCAAGGAGAGTTTGTCCG

ATTCCCGAGACCTGGACGGCTCCTACGACCAGCTCACGGACAGCGTGGACGATGAATTTGAATTGTCCACCGTGTGTCAC

CGGCCTGAGGGTCTGGAGCAGCTGCAGGAGCAAACCAAATTCACGCGCAAGGAGTTGCAGGTCCTGTACCGGGGCTTCAA

GAACGAATGTCCCAGCGGAATTGTCAATGAGGAGAACTTCAAGCAGATTTACTCCCAGTTCTTTCCTCAAGGAGACTCCA

GCACCTATGCCACTTTTCTCTTCAATGCCTTTGACACCAACCATGATGGCTCGGTCAGTTTTGAGGACTTTGTGGCTGGT

TTGTCCGTGATTCTTCGGGGAACTGTAGATGACAGGCTTAATTGGGCCTTCAACCTGTATGACCTTAACAAGGACGGCTG

CATCACCAAGGAGGAAATGCTTGACATCATGAAGTCCATCTATGACATGATGGGCAAGTACACGTACCCTGCACTCCGGG

AGGAGGCCCCAAGGGAACACGTGGAGAGCTTCTTCCAGAAGATGGACAGAAACAAGGATGGTGTGGTGACCATTGAGGAA

TTCATTGAGTCTTGTCAAAAGGATGAGAACATCATGAGGTCCATGCAGCTCTTTGACAATGTCATCTAGCCCCCAGGAGA

GGGGGTCAGTGTTTCCTGGGGGGGACCATGCTCTAACCCTAGTCCAGGCGGACCTCACCCTTCTCTTCCCAGGTCTATCCT

CATCCTACGCCTCCCTGGGGGCTGGAGGGATCCAAGAGCTTGGGGATTCAGTAGTCCAGATCTCTGGAGCTGAAGGGGCC

AGAGAGTGGGCAGAGTGCATCTCGGGGGGGTGTTCCCAACTCCCACCAGCTCTCACCCCCTTCCTGCCTGACACCCAGTGT

TGAGAGTGCCCCTCCTGTAGGAATTGAGCGGTTCCCCACCTCCTACCCTACTCTAGAAACACACTAGAGCGATGTCTCCT

GCTATGGTGCTTCCCCCATCCCTGACCTCATAAACATTTCCCCTAAGACTCCCCTCTCAGAGAGAATGCTCCATTCTTGG

CACTGGCTGGCTTCTCAGACCAGCCATTGAGAGCCCTGTGGGAGGGGGACAAGAATGTATAGGGAGAAATCTTGGGCCTG

AGTCAATGGATAGGTCCTAGGAGGTGGGTGGGGTTGAGAATAGAAGGGCCTGGACAGATTATGATTGCTCAGGCATACCA

GGTTATAGCTCCAAGTTCCACAGGTCTGCTACCACAGGCCATCAAAATATAAGTTTCCAGGCTTTGCAGAAGACCTTGTC

TCCTTAGAAATGCCCCAGAAATTTTCCACACCCTCCTCGGTATCCATGGAGAGCCTGGGGCCAGATATCTGGCTCATCTC

TGGCATTGCTTCCTCTCCTTCCTTCCTGCATGTGTTGGTGGTGGTTGTGGTGGGGGAATGTGGATGGGGGATGTCCTGGC

TGATGCCTGCCAAAATTTCATCCCACCCTCCTTGCTTATCGTCCCTGTTTTGAGGGCTATGACTTGAGTTTTTGTTTCCC

ATGTTCTCTATAGACTTGGGACCTTCCTGAACTTGGGGCCTATCACTCCCCACAGTGGATGCCTTAGAAGGGAGAGGGAA

GGAGGGAGGCAGGCATAGC

FIGURE 12

MONKEY 9QS DNA (CD: 133-795)

CCCACGCGTCCGCCCACGCGTCCGCGGACGCGTGGGGTGCACTAGGCCGCCAGGGGGCGCCGTGTGAGCGCCCTATCCCG

GCCACCCGGCGCCCCCTCCCACGGACCGGGCGGGAGCGGGGCGCCGGGGGCCATGCGGGGCCAGGGCCGCAAGGAGAGTT

TGTCCGATTCCCGAGACCTGGACGGATCCTACGACCAGCTCACGGACAGCGTGGAGGATGAATTTGAATTGTCCACCGTG

TGTCACCGGCCTGAGGGTCTGGAGCAGCTGCAGGAGCAAACCAAATTCACGCGCAAGGAGTTGCAGGTCCTGTACCGGGG

CTTCAAGAACGAATGTCCGAGCGGAATTGTCAATGAGGAGAACTTCAAGCAAATTTACTCCCAGTTCTTTCCTCAAGGAG

ACTCCAGCACCTATGCCACTTTTCTCTTCAATGCCTTTGACACCAACCATGATGGCTCGGTCAGTTTTGAGGACTTTGTG

GCTGGTTTGTCCGTGATTCTTCGGGGAACTGTAGATGACAGGCTTAATTGGGCCTTCAACTTGTATGACCTCAACAAGGA

CGGCTGCATCACCAAGGAGGAAATGCTTGACATCATGAAGTCCATCTATGACATGATGGGCAAGTACACATACCCTGCAC

TCCGGGAGGAGGCCCCAAGGGAACATGTGGAGAACTTCTTCCAGAAGATGGACAGAAACAAGGATGGCGTGGTGACCATT

GAGGAATTCATTGAGTCTTGTCAAAAGGATGAGAACATCATGAGGTCCATGCAGCTCTTTGACAATGTCATCTAGCCCCC

AGGAGAGGGGGTCAGTGTTTCCTGGGGGGACCATGCTCTAACCCTAGTCCAGGTGGACCTCACCCTTCTCTTCCCAGGTC

TATCCTTGTCCTAGGCCTCCCTGGGGGCTGGAGGGATCCAAGAGCTTGGGGATTCAGTAGTCCAGATCTCTGGAGCTGAA

GGGGCCAGAGAGTGGGCAGAGTGCATCTTGGGGGGTGTTCCCAACTCCCACCAGCTTTCACCCGCTTCCTGCCTGACACC

CAGTGTTGAGAGTGCCCCTCCTGTAGGAACTGAGTGGTTCCCCACCTCCTACCCCCACTCTAGAAACACACTAGACAGAT

GTCTCGTGCTATGGTGCTTCCCCCATCCCTGACTTCATAAACATTTCCCCTAAAACTCCCTTCTCAGAGAGAATGCTCCA

TTCTTGGCACTGGCTGGCTTCTCAGACCAGCCTTTGAGAGCCCTGTGGGAGGGGGACAAGAATGTATAGGGGAGAAATCT

TGGGCCTGAGTCAATGGATAGGTCCTAGGAGGTGGCTGGGGTTGAGAATAGAAAGGCCTGGACACAATGTGATTGCTCAG

GCATACCAAGTTATAGCTCCAAGTTCCACAGGTCTGCTACCACAGGCCATCAAAATATAAGTTTCCAGGCTTTGCAGAAG

ACCTTGTCTCCTTGGAAATGCCCCAGATATTTTCCATACCCTCCTCGATATCCATGGAGAGCCTGGGGCTAGATATCTGG

CATATCCCTGGCATTGCTTCCTCTCCTTCCTTCCTGCATGTGTTGGTGGTGGTTGTGGCAGGGGAATGTGGATAGGAGAT

GTCCTGGCAGATGCCTGCCAAAGTTTCATCCCACCCTCCCTGCTCATCGCCCCTGTTTTGAGGGCTGTGACTTGAGTTTT

TGTTTCCCATGTTCTCTATAGACTTGGGACCTTCCTGAACTTGGGGCCTATCACTCCCCACAGTGGATGCCTTAGAAGGG

AGAGGGAAGGAGGGAGGCAGGCATAGCATCTGAACCCAGTGTGGGGGCATTCACTAGGATCTTCAATCAACCCGGGCTCT

CCCCAACCCCCCAGATAACCTCCTCAGTTCCCTAGAGTCTCCTCTTGCTCTACTCAATCTACCCAGAGATGCCCCTTAGC

ACACTCAGAGGGCAGGGACCATAGGACCCAGGTTCCAACCCCATTGTCAGCACCCCAGCCATGCTGCCATCCCTTAGCAC

ACCTGCTCGTCCCATTCAGCTTACCCTCCCAGTCAGCCAGAATCTGAGGGGAGGGCCCCCAGAGAGCCCCCTTCCCCATC

AGAAGACTGTTGACTGCTTTGCATTTTGGGCTCTTCTATATATTTTGTAAAATAAGAACTATACCAGATCTAATAAAACA

CAATGGCTATGCAAAAAAAAAAAAAAAAAAAA

MONKEY 9QS PROTEIN

MRGQGRKESLSDSRDLDGSYDQLTDSVEDEFELSTVCHRPEGLEQLQEQTKFTRKELQVLYRGFKNECPSGIVNEENFKQ

IYSQFFPQGDSSTYATFLFNAFDTNHDGSVSFEDFVAGLSVILRGTVDDRLNWAFNLYDLNKDGCITKEEMLDIMKSIYD

MMGKYTYPALREEAPREHVENFFQKMDRNKDGVVTIEEFIESCQKDENIMRSMQLFDNVI

FIGURE 13

RAT 9QC DNA (CD: 208-966)

TGCTGCCCAAGGCTCCTGCTCCTGCCCCAGGACTCTGAGGTGGGCCCTAAAACCCAGCGCTCTCTAAAGAAAAGCCTTGC

CAGCCCCTACTCCCGGCCCCCAACCCCAGCAGGTCGCTGCGCCGCCAGGGGGCGCTGTGTGAGCGCCCTATTCTGGCCAC

CCGGCGCCCCCTCCCACGGCCCAGGCGGGAGCGGGGCGCCGGGGGCCATGCGGGGCCAAGGCAGAAAGGAGAGTTTGTCC

GAATCCCGAGATCTGGACGGCTCCTATGACCAGCTTACGGGCCACCCTCCAGGGCCCAGTAAAAAAGCCCTGAAGCAGCG

TTTCCTCAAGCTGCTGCCGTGCTGCGGGCCCCAAGCCCTGCCCTCAGTCAGTGAAAACAGCGTAGAGGATGAGTTTGAAT

TATCCACGGTGTGTCACCGACCTGAGGGCCTGGAACAACTCCAGGAACAGACCAAGTTCACACGCAGAGAGCTGCAGGTC

CTGTACCGAGGCTTCAAGAACGAATGCCCCAGTGGGATTGTCAACGAGGAGAACTTCAAGCAGATTTATTCTCAGTTCTT

TCCCCAAGGAGACTCCAGCAACTATGCTACTTTTCTCTTCAATGCCTTTGACACCAACCACGATGGCTCTGTCAGTTTTG

AGGACTTTGTGGCTGGTTTGTCGGTGATTCTTCGGGGGACCATAGATGATAGACTGAGCTGGGCTTTCAACTTATATGAC

CTCAACAAGGACGGCTGTATCACAAAGGAGGAAATGCTTGACATTATGAAGTCCATCTATGACATGATGGGCAAGTACAC

ATACCCTGCCCTCCGGGAGGAGGCCCCAAGAGAACACGTGGAGAGCTTCTTCCAGAAGATGGACAGGAACAAGGACGGCG

TGGTGACCATCGAGGAATTCATCGAGTCTTGTCAACAGGACGAGAACATCATGAGGTCCATGCAGCTCTCACCCCTTCTC

AACTGATACCTAGTGCTGAGGACACCCCTGGTGTAGGGACCAAGTGGTTCTCCACCTTCTAGTCCCACTCTAGAAACCAC

ATTAGACAGAAGGTCTCCTGCTATGGTGCTTTCCCCATCCCTAATCTCTTAGATTTTCCTCAAGACTCCCTTCTCAGAGA

ACACGCTCTGTCCATGTCCCCAGCTGGCTTCTCAGCCTAGCCTTTGAGGGCCCTGTGGGGAGGCGGGGACAAGAAAGCAG

AAAAGTCTTGGCCCCGAGCCAGTGGTTAGGTCCTAGGAATTGGCTGGAGTGGAGGCCAGAAAGCCTGGGCAGATGATGAG

AGCCCAGCTGGGCTGTCACTGCAGGTTCCGGGGCCTACAGCCCTGGGTCAGCAGAGTATGAGTTCCCAGACTTTCCAGAA

GGTCCTTAGCAATGTCCCAGAAATTCACCGTACACTTCTCAGTGTCTTAGGAGGGCCCGGGATCCAGATGTCTGGTTCAT

CCCTGAATCCTCTCCCTCCTTCTTGCTCGTATGGTGGGAGTGGTGGCCAGGGGAAGATGAGTGGTGTCCCGGATGATGCC

TGTCAAGGTCCCACCTCCCCTCCGGCTGTTCTCATGACAGCTGTTTGGTTCTCCATGACCCCTATCTAGATGTAGAGGCA

TGGAGTGAGTCAGGGATTTCCCGAACTTGAGTTTTACCACTCCTCCTAGTGGCTGCCTTAGGGGAATGGGAAGAACCCAG

TGTGGGGGCACCCATTAGAATCTTTGCCCGGCTCCTCACAATGCCCTAGGGTCCCCTAGGGTACCCGCTCCCTCTGTTTA

GTCTACCCAGAGATGCTCCTGAGCTCACCTAGAGGGTAGGGACGGTAGGCTCCAGGTCCAACCTCTCCAGGTCAGCACCC

TGCCATGCTGCTGCTCCTCATTAACAAACCTGCTTGTCTCCTCCTGCGCCCCTTCTCAGTCAGCCAGGGTCTGAGGGGAA

GGGCCTCCCGTTTCCCCATCCGTCAGACATGGTTGACTGCTTTGCATTTTGGGCTCTTCTATCTATTTTGTAAAATAAGA

CATCAGATCCAATAAAACACACGGCTATGCACAAAAAAAAAAAAAAAAAAAAAAAA

RAT 9QC PROTEIN

MRGQGKKESLSESRDLDGSYDQLTGHPPGPSKKALKQRFLKLLPCCGPQALPSVSENSVEDEFELSTVCHRPEGLEQLQE

QTKFTRRELQVLYRGFKNECPSGIVNEENFKQIYSQFFPQGDSSNYATFLFNAFDTNHDGSVSFEDFVAGLSVILRGTID

DRLSWAFNLYDLNKDGCITKEEMLDIMKSIYDMMGKYTYPALREEAPREHVESFFQKMDRNKDGVVTIEEFIESCQQDEN

IMRSMQLSPLLN.

FIGURE 14

RAT 8T (9Q SPLICE VARAIANT) DNA (MAY NOT BE FULL LENGTH, CD: 1-678)

ATGAACCACTGCCCTCGCAGGTGCCGGAGCCCGTTGGGGCAGGCAGCTCGATCTCTCTACCAGTTGGTAACTGGGTCGCT

GTCGCCAGACAGCGTAGAGGATGAGTTTGAATTATCCACGGTGTGTCACCGACCTGAGGGCCTGGAACAACTCCAGGAAC

AGACCAAGTTCACACGCAGAGAGCTGCAGGTCCTGTACCGAGGCTTCAAGAACGAATGCCCCAGTGGGATTGTCAACGAG

GAGAACTTCAAGCAGATTTATTCTCAGTTCTTTCCCCAAGGAGACTCCAGCAACTATGCTACTTTTCTCTTCAATGCCTT

TGACACCAACCACGATGGCTCTGTCAGTTTTGAGGACTTTGTGGCTGGTTTGTCGGTGATTCTTCGGGGGACCATAGATG

ATAGACTGAGCTGGGCTTTCAACTTATATGACCTCAACAAGGACGGCTGTATCACAAAGGAGGAAATGCTTGACATTATG

AAGTCCATCTATGACATGATGGGCAAGTACACATACCCTGCCCTCCGGGAGGAGGCCCCAAGAGAACACGTGGAGAGCTT

CTTCCAGAAGATGGACAGGAACAAGGACGGCGTGGTGACCATCGAGGAATTCATCGAGTCTTGTCAACAGGACGAGAACA

TCATGAGGTCCATGCAGCTCTTTGATAATGTCATCTAGCTCCCCAGGGAGAGGGGTTAGTGTGTCCTAGGGTGACCAGGC

TGTAGTCCTAGTCCAGACGAACCTAACCCTCTCTCTCCAGGCCTGTCCTCATCTTACCTGTACCCTGGGGGCTGTAGGGA

TTCAATATCCTGGGGCTTCAGTAGTCCAGATCCCTGAGCTAAGTCACAAAAGTAGGCAAGAGTAGGCAAGCTAAATCTGG

GGGCTTCCCAACCCCCGACAGCTCTCACCCCTTCTCAACTGATACCTAGTGCTGAGGACACCCCTGGTGTAGGGACCAAG

TGGTTCTCCACCTTCTAGTCCCACTCTAGAAACCACATTAGACAGAAGGTCTCCTGCTATGGTGCTTTCCCCATCCCTAA

TCTCTTAGATTTTCCTCAAGACTCCCTTCTCAGAGAACACGCTCTGTCCATGTCCCCAGCTGGCTTCTCAGCCTAGCCTT

TGAGGGCCCTGTGGGGAGGCGGGGACAAGAAAGCAGAAAAGTCTTGGCCCCGAGCTAGTGGTTAGGTCCTAGGAATTGGC

TGGAGTGGAGGCCAGAAAGCCTGGGCAGATGATGAGAGCCCAGCTGGGCTGTCACTGCAGGTTCCAGGGCCTACAGCCCT

GGGTCAGCAGAGTATGAGTTCCCAGACTTTCCAGAAGGTCCTTAGCAATGTCCCAGAAATTCACCATACACTTCTCAGTG

TCCCGGATGATGCCTGTCAAGGTCCCACCTCCCCTCCGGCTGTTCTCATGACAGCTGTTTGGTTCTCCATGACCCCTATC

TAGATGTAGAGGCATGGAGTGAGTCAGGGATTTCCCGAACTTGAGTTTTACCACTCCTCCTAGTGGCTGCCTTAGGGGAA

TGGGAAGAACCCAGTGTGGGGGCACCCATTAGAATCTTTGCCCGGTTCCTCACAATGCCCTAGGGTCCCCTAGGGTACCC

GCTCCCTCTGTTTAGTCTACCCAGAGATGCTCCTGAGCTCACCTAGAGGGTAGGGACGGTAGGCTCCAGGTCCAACCTCT

CCAGGTCAGCACCCTGCCATGCTGCTGCTCCTCATTAACAAACCTGCTTGTCTCCTCCTGCGCCCCTTCTCAGTCAGCCA

GGGTCTGAGGGGAAGGGCCTCCCGTTTCCCCATCCGTCAGACATGGTTGACTGCTTTGCATTTTGGGCTCTTCTATCTAT

TTTGTAAAATAAGACATCAGATCCAATAAAACACACGGCTATGCACAAAAAAAAAAAAAAAAAA

RAT 8T (9Q SPLICE VARAIANT) PROTEIN (MAY NOT BE FULL LENGTH)

MNHCPRRCRSPLGQAARSLYQLVTGSLSPDSVEDEFELSTVCHRPEGLEQLQEQTKFTRRELQVLYRGFKNECPSGIVNE

ENFKQIYSQFFPQGDSSNYATFLFNAFDTNHDGSVSFEDFVAGLSVILRGTIDDRLSWAFNLYDLNKDGCITKEEMLDIM

KSIYDMMGKYTYPALREEAPREHVESFFQKMDRNKDGVVTIEEFIESCQQDENIMRSMQLFDNVI

FIGURE 15

>human KChIP3 cds = 1-7[redacted]
ATGCAGCCGGCTAAGGAA[redacted]GACAAAGGCGTCGGACGGCAGCC[redacted]CCTGGGGGACCTCGGGC
ACACACCACTTAGCAAGAA
GGAGGGTATCAAGTGGCAGAGGCCGAGGCTCAGCCGCCAGGCTTTGATGAGATGCTGCCTG
GTCAAGTGGATCCTGTCCA
GCACAGCCCCACAGGGCTCAGATAGCAGCGACAGTGAGCTGGAGCTGTCCACGGTGCGCCA
CCAGCCAGAGGGGCTGGAC
CAGCTGCAGGCCCAGACCAAGTTCACCAAGAAGGAGCTGCAGTCTCTCTACAGGGGCTTTA
AGAATGAGTGTCCCACGGG
CCTGGTGGACGAAGACACCTTCAAACTCATTTACGCGCAGTTCTTCCCTCAGGGAGATGCCA
CCACCTATGCACACTTCC
TCTTCAACGCCTTTGATGCGGACGGGAACGGGGCCATCCACTTTGAGGACTTTGTGGTTGGC
CTCTCCATCCTGCTGCGG
GGCACAGTCCACGAGAAGCTCAAGTGGGCCTTTAATCTCTACGACATTAACAAGGATGGCT
ACATCACCAAAGAGGAGAT
GCTGGCCATCATGAAGTCCATCTATGACATGATGGGCCGCCACACCTACCCCATCCTGCGGG
AGGACGCGCCGGCGGAGC
ACGTGGAGAGGTTCTTCGAGAAAATGGACCGGAACCAGGATGGGGTAGTGACCATTGAAGA
GTTCCTGGAGGCCTGTCAG
AAGGATGAGAACATCATGAGCTCCATGCAGCTGTTTGAGAATGTCATCTAGgacacgtccaaaggagt
gcatggccacag
ccacctccacccccaagaaacctccatcctgccaggagcagcctccaagaaacttttaaaaaatagatttgcaaaaagtg
aacagattgctacacacacacacacacacacacacacacacacacacacacacacacagccattcatctgggctggcagaggggac
agagttcagggaggggctgagtctggctaggggccgagtccaggagccccagccagcccttcccaggccagcgaggcgag
gctgcctctgggtgagtggctgacagagcaggtctgcaggccaccagctgctggatgtcaccaagaaggggctcgagtgc
ccctgcaggggagggtccaatctccggtgtgagcccacctcgtcccgttctccattctgctttcttgccacacagtgggc
cggccccaggctcccctggtctcctccccgtagccactctctgcccactacctatgcttctagaaagcccctcacctcag
gaccccagagggaccagctgggggcaggggggagaggggtaatggaggccaagcctgcagctttctggaaattcttcc
ctgggggtcccaggatcccctgctactccactgacctggaagagctgggtaccaggccacccactgtggggcaagcctga
gtggtgaggggccactgggccccattctccctccatggcaggaaggcgggggatttcaagtttagggattgggtcgtggt
ggagaatctgagggcactctctgccagctccacagggtgggatgagcctctccttgccccagtcctggttcagtgggaat
gcagtgggtggggctgtacacaccctccagcacagactgttccctccaaggtcctcttaggtcccgggaggaacgtggtt
cagagactggcagccagggagcccggggcagagctcagaggagtctgggaaggggcgtgtccctcctcttcctgtagtgc
ccctcccatggcccagcagcttggctgagccccctctcctgaagcagtgtcgccgtccctctgccttgcacaaaaagcac
aagcattccttagcagctcaggcgcagccctagtgggagcccagcacactgcttctcggaggccaggccctcctgctggc
tgaggcttgggcccagtagccccaatatggtggccctggggaagaggccttgggggtctgctctgtgcctgggatcagtg
gggccccaaagcccagcccggctgaccaacattcaaaagcacaaaccctggggactctgcttggctgtcccctccatctg
gggatggagaatgccagcccaaagctggagccaatggtgagggctgagagggctgtggctgggtggtcagcagaaacccc
caggaggagagagatgctgctcccgcctgattggggcctcacccagaaggaacccggtcccaggccgcatggcccctcca
ggaacattcccacataatacattccatcacagccagcccagctccactcagggctggcccggggagtccccgtgtgcccc
aagaggctagccccagggtgagcagggccctcagaggaaaggcagtatggcggaggccatgggggcccctcggcattcac
acacagcctggcctcccctgcggagctgcatggacgcctggctccaggctccaggctgactgggggcctctgcctccagg
agggcatcagctttccctggctcagggatcttctccctcccctcacccgctgcccagccctcccagctggtgtcactctg
cctctaaggccaaggcctcaggagagcatcaccaccacacccctgccggccttggccttggggccagactggctgcacag
cccaaccaggaggggtctgcctcccacgctgggacacagaccggccgcatgtctgcatggcagaagcgtctcccttggcc
acggcctgggagggtggttcctgttctcagcatccactaatattcagtcctgtatattttaataaaataaacttgacaaa
ggaaaaaaaaaaaaaaaaaattcctgcggccgcgttctcca

FIGURE 16

>human KChIP3
MQPAKEVTKASDGSLLGDLGHTPLSKKEGIKWQRPRLSRQALMRCCLVKWILSSTAPQGSDSSD
SELELSTVRHQPEGLD
QLQAQTKFTKKELQSLYRGFKNECPTGLVDEDTFKLIYAQFFPQGDATTYAHFLFNAFDADGNG
AIHFEDFVVGLSILLR
GTVHEKLKWAFNLYDINKDGYITKEEMLAIMKSIYDMMGRHTYPILREDAPAEHVERFFEKMD
RNQDGVVTIEEFLEACQ
KDENIMSSMQLFENVI

FIGURE 16 (cont'd)

RAT P19 DNA (FIRST-PASS, PARTIAL CD:1-330)
TTTGAGGACTTTGTGGTTGGGCTCTCCATCCTGCTTCGAGGGACCGTCCATGAGAAGCTCAAGTGGGCCTTCAATCTCTA

CGACATCAACAAGGACGGTTACATCACCAAAGAGGAGATGCTGGCCATCATGAAGTCCATCTACGACATGATGGGCCGCC

ACACCTACCCTATCCTGCGGGAGGACGCACCTCTGGAGCATGTGGAGAGGTTCTTCCAGAAAATGGACAGGAACCAGGAT

GGAGTAGTGACTATTGATGAATTTCTGGAGACTTGTCAGAAGGACGAGAACATCATGAGCTCCATGCAGCTGTTTGAGAA

CGTCATCTAGGACATGTAGGAGGGGACCCTGGGTGGCCATGGGTTCTCAACCCAGAGAAGCCTCAATCCTGACAGGAGAA

GCCTCTATGAGAAACATTTTTCTAATATATTTGCAAAAAGTG

RAT P19 PROTEIN (PARTIAL)
FEDFVVGLSILLRGTVHEKLKWAFNLYDINKDGYITKEEMLAIMKSIYDMMGRHTYPILREDAPLEHVERFFQKMDRNQD

GVVTIDEFLETCQKDENIMSSMQLFENVI

FIGURE 17

MOUSE P19 DNA (CD: 49-819)

CGGGCTGCAAAGCGGGAAGATTAGTGACGGTCCCTTTCAGCAGCAGAGATGCAGAGGACCAAGGAAGCCGTGAAGGCATC

AGATGGCAACCTCCTGGGAGATCCTGGGCGCATACCACTGAGCAAGAGGGAAAGCATCAAGTGGCAAAGGCCACGGTTCA

CCCGCCAGGCCCTGATGCGTTGCTGCTTAATCAAGTGGATCCTGTCCAGTGCTGCCCCACAAGGCTCAGACAGCAGTGAC

AGTGAACTGGAGTTATCCACGGTGCGCCATCAGCCAGAGGGCTTGGACCAGCTACAAGCTCAGACCAAGTTCACCAAGAA

GGAGCTGCAGTCCCTTTACCGAGGCTTCAAGAATGAGTGTCCCACAGGCCTGGTGGATGAAGACACCTTCAAACTCATTT

ATTCCCAGTTCTTCCCTCAGGGAGATGCCACCACCTATGCACACTTCCTCTTCAATGCCTTTGATGCTGATGGGAACGGG

GCCATCCACTTTGAGGACTTTGTGGTTGGGCTCTCCATCCTGCTTCGAGGGACGGTCCATGAGAAGCTCAAGTGGGCCTT

CAATCTCTATGACATTAACAAGGATGGTTGCATCACCAAGGAGGAGATGCTGGCCATCATGAAGTCCATCTACGACATGA

TGGGCCGCCACACCTACCCCATCCTGCGGGAGGATGCACCCCTGGAGCATGTGGAGAGGTTCTTTCAGAAAATGGACAGG

AACCAGGATGGAGTGGTGACCATTGATGAATTTCTGGAGACTTGTCAGAAGGATGAGAACATCATGAACTCCATGCAGCT

GTTTGAGAACGTCATCTAGGACATGTGGGAGGGGACCCCAGTGGTCATTGCTTCTCAACCCAGAGAAGCCTCAATCCTGA

CAGGAGAAGCCTCTATGAGAAACATTTTTCTAATATATTTGCAAAAAGTGAGCAGTTTACTTCCAAGACACAGCCACCGT

CACACACAGACACAGACATACAGACACACACACACACACACACACATGGTTCCTCTGGCTTGGCCAAGGAAGTGGCAGCC

AGAAGGCACCCCCGCCTATTCCTAGGTCAATAAAAAAAGGCTGCCTCTGGGATGGCCAGCCCTGGCTAGATGTTACCCACA

AGGAACTCAGAGATCGAGAGGACCAGGTCTACAAAGCTAAGGTCCCTGTGTCTTTTCTACCACTCGGGAGATCAAACTAC

TCCCTGCCTATGGACCCATGCTCTTAGGAAGCTCCCAGAAACTCCAAGGGGACAAAGAGGGGAGAGGTCTATAGGAAGAA

ATGGTTTTGGAAGCTGGGCTTGCAGCCTTATGCTAATGATCACCTGGGGTCCTGGAACCCGAGTGCCAGGCTACCTACTA

TGCCGTGAGCTTAGATAGTGAGGGGCCATTGGACTAAGACCTCCTGTAAGAGTGGGGCAGGATTGAGGTTTTTGGAGAAA

CTGAGGAAACAATTTGTCCATACCACTGGGTGAAGACTGCTGGCCAGTGGGAATGTGGCTGGTGGAGATTTCCCAACTTC

CAGCACCAGGATGGCCTCTCCAAGGTCCTCTTTGATTCCCTGGGGAGATCACCTGGCTCATAGACTGACAACCAGGGAAC

TGGGCTGAAATGGGAGGTCTGGTAGGGGGCATCCCCCTCCTTTTCCCTGGCCACTTGCCACCCAGTTCCTTAACACAGTG

GATCGGCCACACCTCTGTGGCTGCCCTTGAACAGACTCATCCCGACCAAGACAAAAAAGCACAAACTCCTAGCAGCTCAG

GCCAAGCCCACAAGGGAAGGCCTGGGTCCCTGCAGCCCTGATTCAGTGGCCGAGGAAGACGCTCAGACATCCATCCTGTA

CCTCGGAGCCTTGGGGGTCTCACAGCCCTTTCCCAGCCCAGCTCGCCAACATTCTAAAGCACAAACCTGCGGATTCTGCT

TGCTTGGGCTGCGCCCTGGGGATTGAAGGCCACTGTTAACCCTAAGCTGGAGCTAGCCCTGAGGGCTGGGGACCTGTGAC

CAGGCAACAGGTCAGCAGACCCTCAGGAGGAGAGAGAGCTGTTCCTGCCTCCCCAGGCCTCGCCCAGAAGGAACAGTGTC

CCAAGAAGCATGTTTCCTGGAGGAACATCCCCACAAAAGTACATTCCATCATCTGAAGCCCGGTCTCTGCTCAGGCCTGC

CTCTGAAAGTCCACGTGTGTTCCCCAGAAGGCCAGCCCCAAGATAAGGGAGGTCCTTAGAGGAAGGACAGGGTGACAACA

CCCCTATACACAGGTGGACCCCCCCTCTGAGGACTGTACTGACCCCATCTCCATCCTGACCGGGGCCTTCCTTTACCCGA

TCTACAGACCACCAGTTCTCCCTGGCTCAGGGACCCCCTGTCCCCCAGTCTGACTCTTCCCATCGAGGTCCCTGTCTTGT

GAAAAGCCAAGGCCACGGGAAAAGGCCACCACTCTAACCTGCTGCATCCCTTAGCCTCTGGCTGCACGCCCAACCTGGAG

GGGTCTGTCCCCTTTGCAGGGACACAGACTGGCCGCATGTCCGCATGGCAGAAGCGTCTCCCTTGGGTGCAGCCTGGAAG

GGTGGTTTCTGTCTCAGCGCCCACCAATATTCAGTCCTATATATTTTAATAAAAGAAACTTGACAAAGGAAAAAAAAAAAA

AAAA

FIGURE 18

>AI 352454 (partial) cds = 1-339
CACGAGGTGGAAAGCATTTCGGCTCAGCTGGAGGAGGCCAGCTCTACAGGCGGTTTCCTGT
ACGCTCAGAACAGCACCAA
GCGCAGCATTAAAGAGCGGCTCATGAAGCTCTTGCCCTGCTCAGCTGCCAAAACGTCGTCTC
CTGCTATTCAAAACAGCG
TGGAAGATGAACTGGAGATGGCCACCGTCAGGCATCGCCCCGAAGCCCTTGAGCTTCTGGA
AGCCCAGAGCAAATTTACC
AAGAAAGAGCTTCAGATCCTTTACAGAGGATTTAAGAACGTAAGAACTTTCTTTTTGACTTT
ACCTTCACACAATTCCCA
GAGGAGCATTGAGAAATGAgaggaaaaggggaaaatatcccattctatgagaagccccatcatatgtatatttcatact
gatccttcccagataggaatataatcagtatctgtggactttgaatctctgtggcacacccatgctggcatactgtaatt
gcccattaaacaaanagtttttgagaaaaaaaaaaaaaaaaaaaaaaaaa

>AI352454
HEVESISAQLEEASSTGGFLYAQNSTKRSIKERLMKLLPCSAAKTSSPAIQNSVEDELEMATVRHR
PEALELLEAQSKFT
KKELQILYRGFKNVRTFFLTLPSHNSQRSIEK

FIGURE 19

P193 (AA349365) DNA (CD: 2-127, partial)

TGAAAGGTTCTTCGAGAAAATGGACCGGAACCAGGATGGGGTAGTGACCATTGAAGAGTTCCTGGAGGC
CTGTCAGAAGGATGAGAACATCATGAGCTCCATGCAGCTGTTTGAGAATGTCATCTAGGACACGTCCAAA
GGAGTGCATGGCCACAGCCACCTCCACCCCCAAGAAACCTCCATCCTGCCAGGAGCAGCCTCCAAGAAA
CTTTTAAAAAATAGATTTGCAAAAAGTGAACAGATTGCTACACACACACACACACACACACACACACAC
ACACACACACAGCCATTCATCTGGGCTGGCAGAGGGGACAGAGTTCAGGGAGGGGCTGAGTCTGGCTAG
GGGCCGAGTCCAGGAGCCCCAGCCAGCCCTTCCCAGGCCAGCGAGGCGAGGCTGCCTCTGGGTGAGTGG
CTGACAGAGCAGGTCTGCAGGCCACCAGCTGCTGGATGTCACCAAGAAGGGGCTCGAGTGCCCCTGCAG
GGGAGGGTCCAATCTCCGGTGTGAGCCCACCTCGTCCCGTTCTCCATTCTGCTTTCTTGCCACACAGTGGG
CCGGCCCCAGGCTCCCCTGGTCTCCTCCCCGTAGCCACTCTCTGCCCACTACCTATGCTTCTAGAAAGCCC
CTCACCTCAGGACCCCAGAGGGACCAGCTGGGGGGCAGGGGGGAGAGGGGGTAATGGAGGCCAAGCCT
GCAGCTTTCTGGAAATTCTTCCCTGGGGGTCCCAGGATCCCCTGCTACTCCACTGACCTGGAAGAGCTGG
GTACCAGGCCACCCACTGTGGGGCAAGCCTGAGTGGTGAGGGGCCACTGGGCCCCATTCTCCCTCCATGG
CAGGAAGGCGGGGGATTTCAAGTTTAGGGATTGGGTCGTGGTGGAGAATCTGAGGGCACTCTCTGCCAG
CTCCACAGGGTGGGATGAGCCTCTCCTTGCCCCAGTCCTGGTTCAGTGGGAATGCAGTGGGTGGGGCTGT
ACACACCCTCCAGCACAGACTGTTCCCTCCAAGGTCCTCTTAGGTCCCGGGAGGAACGTGGTTCAGAGAC
TGGCAGCCAGGGAGCCCGGGGCAGAGCTCAGAGGAGTCTGGGAAGGGGCGTGTCCCTCCTCTTCCTGTA
GTGCCCCTCCCATGGCCCAGCAGCTTGGCTGAGCCCCCTCTCCTGAAGCAGTGTCGCCGTCCCTCTGCCTT
GCACAAAAAGCACAAGCATTCCTTAGCAGCTCAGGCGCAGCCCTAGTGGGAGCCCAGCACACTGCTTCT
CGGAGGCCAGGCCCTCCTGCTGGCTGAGGCTTGGGCCCAGTAGCCCCAATATGGTGGCCCTGGGGAAGA
GGCCTTGGGGGTCTGCTCTGTGCCTGGGATCAGTGGGGCCCCAAAGCCCAGCCCGGCTGACCAACATTCA
AAAGCACAAACCCTGGGGACTCTGCTTGGCTGTCCCCTCCATCTGGGGATGGAGAATGCCAGCCCAAAG
CTGGAGCCAATGGTGAGGGCTGAGAGGGCTGTGGCTGGGTGGTCAGCAGAAACCCCCAGGAGGAGAGA
GATGCTGCTCCCGCCTGATTGGGGCCTCACCCAGAAGGAACCCGGTCCCAGGCCGCATGGCCCCTCCAGG
AACATTCCCACATAATACATTCCATCACAGCCAGCCCAGCTCCACTCAGGGCTGGCCCGGGGAGTCCCCG
TGTGCCCCAAGAGGCTAGCCCCAGGGTGAGCAGGGCCCTCAGAGGAAAGGCAGTATGGCGGAGGCCATG
GGGGCCCCTCGGCATTCACACACAGCCTGGCCTCCCCTGCGGAGCTGCATGGACGCCTGGCTCCAGGCTC
CAGGCTGACTGGGGGCCTCTGCCTCCAGGAGGGCATCAGCTTTCCCTGGCTCAGGGATCTTCTCCCTCCC
CTCACCCGCTGCCCAGCCCTCCCAGCTGGTGTCACTCTGCCTCTAAGGCCAAGGCCTCAGGAGAGCATCA
CCACCACACCCCTGCCGGCCTTGGCCTTGGGGCCAGACTGGCTGCACAGCCCAACCAGGAGGGGTCTGC
CTCCCACGCTGGGACACAGACCGGCCGCATGTCTGCATGGCAGAAGCGTCTCCCTTGGCCACGGCCTGGG
AGGGTGGTTCCTGTTCTCAGCATCCACTAATATTCAGTCCTGTATATTTTAATAAAATAAACTTGACAAAG
GAAAAAAAAAAAAAAAAAA

P193 PROTEIN (PARTIAL)

ERFFEKMDRNQDGVVTIEEFLEACQKDENIMSSMQLFENVI

FIGURE 20

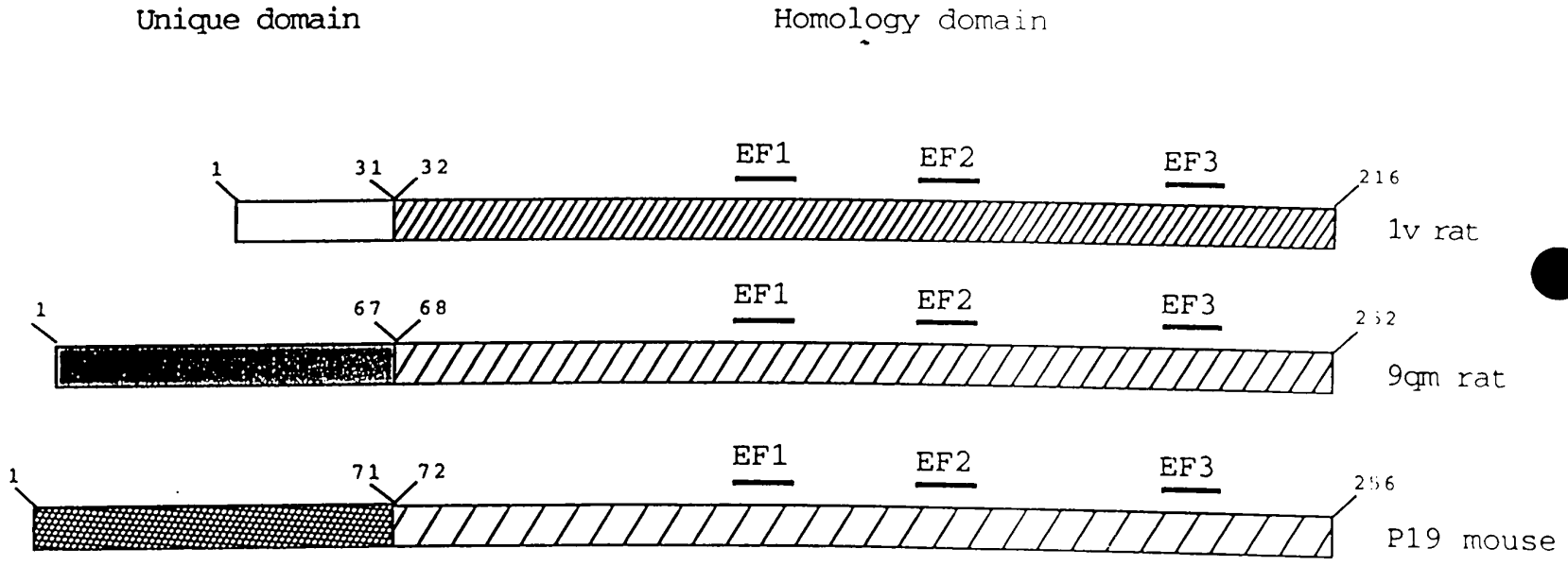


Diagram to indicate homology and uniqueness among rat 1v, rat 9qm, and mouse p19 proteins.
Numbers: amino acid positions.

The C-terminal 185 amino acids are conserved (hatched lines). The homologies among the homology domains are:
rat 1v vs rat 9q: 74%
rat 1v vs mouse P19: 71%
rat 9q vs mouse P19: 75%

The N-termini are distinct (open and shaded boxes).

The putative calcium-binding EF-hand motifs conserved in all are represented as solid bars.

FIGURE 21

Human 9q genomic DNA sequences:

A. exon1 sequence (with introns included):

CGGGAGCAGAGCCAGCTCGGCTCCGCTCCCCCCTCACCTCCGCTCTGCCTCCGGCTCTGCGCTCACCTGCTGCCT
AGTGTTCCCTCTCCTGCTCCAGGACCTCCGGGTAGACCTCAGACCCCGGGCCCATTCCCAGACTCAGCCTCAGCCCG
GACTTCCCCAGCCCCGACAGCACAGTAGGCCGCCAGGGGGCGCCGTGTGAGCGCCCTATCCCGGCCACCCGGCGCCC
CCTCCCACGGCCCGGGCGGGAGCGGGGCGCCGGGGGCCATGCGGGGCCAGGGCCGCAAGGAGAGTTTGTCCGATTCC
CGAGACCTGGACGGCTCCTACGACCAGCTCACGGGTGAGTCAGTGACGTGGGGGTCGCGGGAGGGAGGGTGGATTCC
ATTCCTCCAGACCCTTCCGCCTCTCCGACCCCGGCCTGGCCCGCACCAACACTCTGCCCCATTCCCAGGCACTCTTA
TGGCCGGTCTGGGCGGCAGGACACTGGGGGTTCAAAGCCTTGGGTCCCGCAGGGGTTGGGGAGGAACAGAAGAGGCA
GGTGTGGAGAGGCAGCAGGTGTGGGCGTATGTGACACAGGGCTGAGAGGGTGTCTGGAGTGGGAGGTGTTACCGTGC
GTGAGCACCTGTCATTCTGTGTGTGTGTGTGTGTGCGCGCGCACCTCCCACAGCTGGTTGCCATGTGCCCTGGGC
TTGGTGACAGCTAGGGTGAGTGTGATTGTATGTGGCAGTGCAATTGTATGGTCTCGTCAGATGTTTGAGTTTGCGTA
GGACCCTGGTTGTACTGATGAAGTTGTTTTGACCATGTGTCTYTATGTGCAACGATGTGTTGTGAGTGTGTAATTCT
GTATGAAAGTGGTGTGTAACTACCAGAATGTGTCAGGGCTCTACTTTAGGGTGGCTTGTCTCTTTG

B. Exon 2-11 sequence (with introns included):

AGCCNANTGGGTCNCCATGTGTATGCATCCTGTTTACTTAGGTCACATTTGTATATGTTGTGTAAGGAGTACCAGGT
CAATGTGTGTGTGTGTGTGAGCATGNATAAACGCCANCAGGTGTGAGTTANTGAATATCAAGCTGTCACTGGCACCC
ATCACTGTGATGTATTGTTCATACATGTCACNAACACGGCCTGTCACTGTAGGTGTGTGTATRAGAGAGGTGTTCTT
ACCCAGGCAATCCTTGGGTTGGACATCATCNTGAGAGGTCCAGCCATGGCACTTGAGCCAAGGGTACTAGGTCAGCA
AAGACATTGAGGCCACTGCCACCTCATCCTTGCCGCCTCGCTGTCACCGGCCACGTCCCATTAAACCAAGTGCNTGA
GCCTCACCTCTATGGACTCACTGGGCTCCCCTAACCCGATTCCAACCACCCTTGCCATTCCTTTCCTCCCCTTAATT
CCTCCCCCAGCCCGGTCCCCAGATGGGGTTGATTTGTGACTGGCGGGGAGGGGACAGGGAACAGAGGGACCCCGGGA
GTTAATGTGCCTTCCTGGGGTCTTCTCTCTTCNCAGGCCACCCTCCAGGGCCCACTAAAAAAGCGCTGAAGCAGCGA
TTCCTCAAGCTGCTGCCGAGCTGCGGGCCCCAAGCCCTGCCCTCAGTCAGTGAAAGCAAGTGCCTCTCATGTGCTTC
CCGGGGCGGGGCTCGATGTGTGCGTGCGTGTCTGTGCATGANTGTGTGCGCGTGTGCCCCAGGCCTGCRAGTGTKCS
CATGYTCCAGGCTTGCATGTGTGGGGGGGCGTGCCCCAAGCCTKSGTGTTTGGGGGTGGGGCCTGCCCCAVGCCTGT
GCGTGTGTATGTGTGTGCATGTGCGCRCGAGCGTRCCCCAGACCGGCGTGTGTGTGTGTGGGGGCGTGCCCTACCCC
TGCATGTGTGTGGAGGGCGTGCCCCAKGCCCKCGGCGNGTTGTTTGTTGTGTATGGGAAGGCGTACCGCACGCCTGC
GTGTGGGGGAGGGGCGTGCCCCAGAGCCTGCGTGCGTGTGTGTGTGTGTGTGTGTGTGTGGGCGTGACCAGCG
TGGCGAGGGCGGGTGCTGGCAAGGCTGGAGCATAAGNGGGCGNGGCTACATGTGTGNGTGTACGNCTGAAGCCAGCG
TGTGTGGGCGTGGTCAGTTGGNAGCGGGTGTGTGTCACCGCTCCCGCAAAACTGTGGGACCCGAGAGTGTGGGTGTG
ACCATTGTGACCAGGNTGAGGCCTGAGCCTGTGTAGCTGTGGCGGCCTGTGTAGACCAGGCGGCCGTGAGGGTCTGT
ATGTGGCTTAGCTGGGTTAGTGTCTTCAACTCCGTGCGGCCGCCCCCTTCCCCACCGTGTTTTGGACCCCTGATGTG
TGTTGCCTATGCCCCGACAGGATGGTGACAGGTGTAGAGGATGGCGCCTGCCCTCCTCCAGACGCCAGGGTATTTGG
GTTTTCTGTGCCAGCCTGGTCCCCTGCTGAAGTGATCTCCAGTTGAGTGACCTCGCTTTGTCTCTAGGTCTCCATTT
CCTCAGTTGGGCCTTGCCCACCTCATAGGATCATACTGCATTTTGCAAACCATAAAGGCCCGCTTTGTAGTTATTTG
AGCATGCTGTTGTGTTGGACTTAGATGGGTCCCACACGGGGGTGGATTCGGARAAGGACAGGCGTGAGTCCCGCAAG
CTTGTGTGCATGGGGTCCGTTTCGTGTGTGTCTGTGCTGGTTGGGTGTGCCTTTGCACGGGCTGGGTTGTCAGGTTT
GCTCTGAGTGTGAGGGGCCAGGTGTGTGTATGCAGTTGGCCGGGTCTTCCGCTTTCTCGGTGWCAGTTCGCTCCCTT
CAGCATTAGCCGCCCCAGCCTCCCTCCGCCCCCACAGACCCCGCCTGCTGGACCCAGGTGACTTACGCTCCTGGTGG
GGGCGGGGCGGGGCAGGGCGGCTTTGCCATCTTGGGGTGGGGGGCACTTGCCTGGGGGCTGGACGTTGGGGGCGGGG
CAGGATTGAGATGGGGCCGGGGGTGGGGTCTGGATGGAGGTTGGCTGAGCTGGGCGGGGCATGGCTCAGGCATGGCT
GGGATAGATGGGGCTGGGCGGGGCGAGGGGAGGGGCTGGGTGGGACGAGGGGAGGGTTTGGGCGGGGCAAGGCTGGG
GCTGGGCGGATCTGAGTTGGTCCCCGAAGGCCCGGAGCTCTGACCCTCAGACGCCCCCTCTTGAACTGGCTTTTCCC
ACTCCTCCCTTTCTAAAACGAAGATGCGGCTGGGGGCCTTCCCCTCCAACGAGGGATCGAGGGCCGCGGGGCGAGCA
CTGAGTCGGATCCCTGGCTCTGGGGCCAGGCCAGGCCTTGGCCCGCTGATAGACCTCGAAGATGGCCATCATCTTTT
CTCCTTACCTCAGTGTCCTTGGCTCGGGGCCCAGGGAACTGGCAGCCTGGTCTCCGGCATCGGATGGGACCGGGGGG
CGGGGAGGGGGTGAATGGGGCAGTGATTTGAAGAGGGGTCGCGGAGGCTGGGCATGAGGCGCGGCTGTCCTCACCGC
TCCCGCAGACAGCGTGGACGATGAATTTGAATTGTCCACCGTGTGTCACCGGCCTGAGGGTCTGGAGCAGCTGCAGG
AGCAAACCAAATTCACGCGCAAGGAGTTGCAGGTCCTGTACCGGGGCTTCAAGAACGTGAGTGCNGGGCGAGGCCAA

FIGURE 22

ACTCAGCGNGGGTGGGACAGGAGGACCCAANCCGGTCCANATTTTTCCCANAAAGCATGGCTTNGATGCTTGAGGNG
CGGGCGGAAGGGAGGCAAGGCCCTGAGACTGAACTTCTAGCTGGAGGTTCTGGGGCGGGGCCAGAACGRAAGTGGCG
CCTGTAGACTGTCAGTTTCGTTCCATGTTTTTTATTTGTGCACTGGGAAAGAAGTCTTCCCTCCCATCACATGAGCC
ACGTGGTGAGTCCTCTGGAGGCTTGAAGATTATCCCCCTCCCTGGGAGTCTTGGGCCATGGAGGGTGGGGGCGGTGA
ACGGAAGGGGATTTTGTCTCTGCCCTCAGCCTGGTGCCCTCTCCTTCCAGGAATGTCCCAGCGGAATTGTCAATGAG
GAGAACTTCAAGCAGATTTACTCCCAGTTCTTTCCTCAAGGAGGTGAGGGGACAAGGCCCAAGGGGAAGCAGTTGTC
CTTCTCTAGGCTGAGGGAGGGAGGGATTCTGGAGGAGCTGGGAATGCCAAGGTGATGGGGGGTATGGGGAGCTCCTT
AGAGGGAGGAAGTCCTCTCCTGTGTGGAAGCCAACTTCTCCACACTCACCCTGCAGACTCCAGCACCTATGCCACTT
TTCTCTTCAATGCCTTTGACACCAACCATGATGGCTCGGTCAGTTTTGAGGTGAGCTGGGCGAGGTGGGCCAGGGAA
GCCTGTTTCCTGGAGTTCAGGGCCAGGATCTCCAGGCCAAACCCAGAGAAGGAGTTGGGTGAAGAGKACCCGAGGAC
ACAGCTCCCTNCTGCCTTCTTCCCAGGACTTTGTGGCTGGTTTGYCCGTGATTCTTCGGGGAACTGTAGATGACAGG
CTTAATTGGGCCTTCAACCTGTATGACCTTAACAAGGACGGCTGCATCACCAAGGAGGTGCAGGGCAACTGAAGGGC
TGGGGGTCTGTGGCGGTGATGGGGGTGGCGTGCAKAGGGTGATGGGAGGGAAATATGACCCACATATGCCCACAAGC
AATGGGATCAAGGGAGGCTGGAGGCTCTGAGGAAGGATCCTCTTCTCTCTTGGCCTAACAGGAAATGCTTGACATCA
TGAAGTCCATCTATGACATGATGGGCAAGTACACGTACCCTGCACTCCGGGAGGAGGCCCCAAGGGAACACGTGGAG
AGCTTCTTCCAGGTACTTGGGAGTGGGTATGGCTGGAGGGCCCTGGAGTGAAGGGAAGAAGGCCAAGAACCAGCAGG
GAACTCACCTGACTTCTGTCTGCCTCTCTCTTGCCATCCCTCCTGTTCTCCCTGCCTGACCACCTTCTTGCAGAAGA
TGGACAGAAACAAGGATGGTGTGGTGACCATTGAGGAATTCATTGAGTCTTGTCAAAAGGTACAGCTCCCTGCCCTC
TACATTACCCTGACCTGGACTCAGGCCTGATTTAGTAATGCAGGGAAAAGCTTCTTTGGGAAGAATACCACCTTCCC
ACCTCACCCCCATATTTCAATCCTATTCCTTTGTGGGAGGCTTACCCCTTCCCTACCTCAGGTCTCTCTGGGCATCT
CCTTCCTCTGTGCTTTTGAATGTCCCCGTCTGTGACTCAAGTGTCCCTCTCACTGTCTCTGATAAAGCTCCTTCTCT
TTCTCTCTCTTCAATCTGCCTCGCTCACATCATGGCCACAGGATGAGAACATCATGAGGTCCATGCAGCTCTTTGAC
AATGTCATCTAGCCCCCAGGAGAGGGGGTCAGTGTTTCCTGGGGGGACCATGCTCTAACCCTAGTCCAGGCGGACCT
CACCCTTCTCTTCCCAGGTCTATCCTCATCCTACGCCTCCCTGGGGGCTGGAGGGATCCAAGAGCTTGGGGATTCAG
TAGTCCAGATCTCTGGAGCTGAAGGGGCCAGAGAGTGGGCAGAGTGCATCTCGGGGGGTGTTCCCAACTCCCACCAG
CTCTCACCCCCTTCCTGCCTGACACCCAGTGTTGAGAGTGCCCCTCCTGTAGGAATTGAGCGGTTCCCCACCTCCTA
CCCCTACTCTAGAAACACACTAGACAGATGTCTCCTGCTATGGTGCTTCCCCCATCCCTGACCTCATAAACATTTCC
CCTAAGACTCCCCTCTCAGAGAGAATGCTCCATTCTTGGCACTGGCTGGCTTCTCAGACCAGCCATTGAGAGCCCTG
TGGGAGGGGGACAAGAATGTATAGGGAGAAATCTTGGGCCTGAGTCAATGGATAGGTCCTAGRAGGTGGCTGGGGTT
GAGAATAGAAGGGCCTGGACAGATTATGATTGCTCAGGCATACCAGGTTATAGCTCCAAGTTCCACAGGTCTGCTAC
CACAGGCCATCAAAATATAAGTTTCCAGGCTTTGCAGAAGACCTTGTCTCCTTAGAAATGCCCCAGAAATTTTCCAC
ACCCTCCTCGGTATCCATGGAGAGCCTGGGGCCAGATATCTGGCTCATCTCTGGCATTGCTTCCTCTCCTTCTTTCC
TGCATGTGTTGGTGGTGGTTGTGGTGGGGGAATGTGGATGGGGGATGTCCTGGCTGATGCCTGCCAAAATTTCATCC
CACCCTCCTTGCTTATCGTCCCTGTTTTGAGGGCTATGACTTGAGTTTTTGTTTCCCATGTTCTCTATAGACTTGGG
ACCTTCCTGAACTTGGGGCCTATCACTCCCCACAGTGGATGCCTTAGAAGGGAGAGGGAAGGAGGGAGGCAGGCATA
GCATCTGAACCCAGTGTGGGGGCATTCACTAGAATCTTCAATCAACCTGGGCTCTCCCCACCCCACCCCAGATAACC
TCCTCAGKTCCCTAGGGTCTCTTCTYGCTTGACTCAATCTACCCAGAGATGCCCCTTAGCACACCTAGAGGGCAGGG
ACCATAGGACCCAGGTTCCAACCCCATTGTCAGCACCCCAGCCATGCGGCCACCCCTTAGCACACCTGCTCGTCCCA
TTTAGCTTACCCTCCCAGTTGGCCAGAATCTGAGGGGAGAGCCCCCAGAGAGCCCCCTTCCCCATCAGAAGACTGTT
GACTGCTTTGCATTTTGGGCTCTTCTATATATTTTGTAAAGTAAGAAATATACCAGATC:TAATAAAACACAATGGC
TATGCACAGGCTGCCGTCTCTGCCTTTTGTCCCTCCCACCTACAAATACTACACAACCCCTAACGAATGCACCTGCA
GCCTTTTAGATCCCCAAGAAAGTGGCTTTCTTTTCCATAGTTGGCCATACCTTGGCATGAGACTGAGACACAGGCTC
TGGAATGGTTGGAAACCCACCCAACCTCAGGCCCCCACATGAATCTCCCTCCCACACAGCCTGAGAGGAGACAAGGA
AGGAAGGACAGGACACTGATGTCCCGAAGACTGTGCCAAGCAAGCTGTTTTTTAGCTGACATTCTTACAAGTTGAAT
CACAGATTTCTAATTTACAGACTTTTTAGTTAATCTCAAAGTGCTTTCTTTTGAGGGGCCTCCTTTAAGTTCYTTCT
TTTTTTTTTTTTTT

FIGURE 22 (cont'd)

>monkey KChIP4 cds = 265

gtcgacccacgcgtccggtgcgctgtgg[redacted]gagaggctgg
actttagtccaggtctgtcctcaccccgggggaccgccggctttgcagggtgcagctgcgaggaactgctcacttttttc
cccttgcaagtctttgttccaagcctgacgttgctacgattctgtaattaactccctccactccaaaggggtctggaggc
tgggatgctctgccagctcagaggATGTTGACTCTGGAGTGGGAGTCCGAAGGACTGCAAACAGTGGGTA
TTGTTGTGAT
TATATGTGCATCTCTGAAGCTGCTTCATTTGCTGGGACTGATTGATTTTTCGGAAGACAGCGT
GGAAGATGAACTGGAGA
TGGCCACTGTCAGGCATCGGCCTGAGGCCCTTGAGCTTCTGGAAGCCCAGAGCAAATTTACC
AAGAAAGAGCTTCAGATC
CTTTACAGAGGATTTAAGAACGAATGCCCCAGTGGTGTTGTTAATGAAGAAACCTTCAAAGA
GATTTACTCGCAGTTCTT
TCCACAGGGAGACTCTACAACATATGCACATTTTCTGTTCAATGCGTTTGATACGGACCACA
ATGGAGCTGTGAGTTTCG
AGGATTTCATCAAAGGTCTTTCCATTTTGCTCCGGGGGACAGTACAAGAAAAACTCAATTGG
GCATTTAATCTGTATGAT
ATAAATAAAGATGGCTACATCACTAAAGAGGAAATGCTTGATATAATGAAAGCAATATACG
ACATGATGGGTAAATGTAC
ATATCCTGTCCTCAAAGAAGATGCACCCAGACAACACGTCGAAACATTTTTTCAGAAAATGG
ACAAAAATAAAGATGGGG
TTGTTACCATAGATGAGTTCATTGAAAGCTGCCAAAAAGATGAAAACATAATGCGCTCCATG
CAGCTCTTTGAAAATGTG
ATTTAActtgtcaactagatcctgaatccaacagacaaatgtgaactattctaccacccttaaagtcggagctaccactt
ttagcatagattgctcagcttgacactgaagcatattatgcaaacaagctttgttttaatataaagcaatccccaaaaga
tttgagtttctcagttataaatttgcatcctttccataatgccactgagttcatgggatgttctaactcatttcatactc
tgtgaatattcaaaagtaatagaatctggcatatagttttattgattccttagccatgggattattgaggctttcacata
tcagtgattttaaaataccagtgtttttgctctcatttgtatgtattcagtcctaggattttgaatggttttctaatat
actgacatctgcatttaatttccagaaattaaattaattttcatgtctgaatgctgtaattccatttatatactttaagt
aaacaaataagattactacaattaaacacatagttccagtttctatggccttcccttcccaccttctattataaattaat
tttatctggtatttttaaacatttaaaaatttatcatcagatatcagcatatgcctaattatgcctaatgaaacttaata
agcatttaattttccatcatacattatagccaaggcctatatactatatataattttggatttgtttaatcttacaggct
gttttccattgtatcatcaagtggaagttcaagacggcatcaaacaaaacaaggatgtttacagacatatgcaaagggtc
aggatatctatcctccagtatatgttaatgcttaataacaagtaatcctaacagcattaaaggccaaatctgtcctctt
cccctgacttccttacagcatgtttatattacaagccattcagggacaaagaaaccttgactaccccactgtctactagg
aacaaacaaacagcaagcaaaattcactttgaaagcaccagtggttccattacattgacaactactaccaagattcagta
gaaaataagtgctcaacaactaatccagattacaatatgatttagtgcatcataaaattccaacaattcagattattttt
aatcatctcagccacaactgtaaagttgccacattactaaagacacacacatcgtccctgttttgtagaaatatcacaaa
gaccaagaggctacagaaggaggaaatttgcaactgtctttgcaacaataaatcaggtatctattctggtgtagagatag
gatgttgaaagctgccctgctatcaccagtgtagaaattaagagtagtacaatacatgtacactgaaatttgccatcgcg
tgtttgtgtaaactcaatgtgcacattttgtatttcaaaaagaaaaaataaaagcaaaataaaatgttwawaamwmwaaa
aaaaaaaaaaaa

>monkey KChIP4

MLTLEWESEGLQTVGIVVIICASLKLLHLLGLIDFSEDSVEDELEMATVRHRPEALELLEAQSKFT
KKELQILYRGFKNE
CPSGVVNEETFKEIYSQFFPQGDSTTYAHFLFNAFDTDHNGAVSFEDFIKGLSILLRGTVQEKLNW
AFNLYDINKDGYIT
KEEMLDIMKAIYDMMGKCTYPVLKEDAPRQHVETFFQKMDKNKDGVVTIDEFIESCQKDENIM
RSMQLFENVI

FIGURE 23

>monkey KChIP4 C terminal splice variant cds = 265-966

gtcgacccacgcgtccggtgcgctgtggttgcgggggggagccccgccagccaaatgccaggatcagcatgagaggctgg
actttagtccaggtctgtcctcaccccgggggaccgccggctttgcagggtgcagctgcgaggaactgctcacttttttc
cccttgcaagtctttgttccaagcctgacgttgctacgattctgtaattaactccctccactccaaaggggtctggaggc
tgggatgctctgccagctcagaggATGTTGACTCTGGAGTGGGAGTCCGAAGGACTGCAAACAGTGGGTA
TTGTTGTGAT
TATATGTGCATCTCTGAAGCTGCTTCATTTGCTGGGACTGATTGATTTTTCGGAAGACAGCGT
GGAAGATGAACTGGAGA
TGGCCACTGTCAGGCATCGGCCTGAGGCCCTTGAGCTTCTGGAAGCCCAGAGCAAATTTACC
AAGAAAGAGCTTCAGATC
CTTTACAGAGGATTTAAGAACGAATGCCCCAGTGGTGTTGTTAATGAAGAAACCTTCAAAGA
GATTTACTCGCAGTTCTT
TCCACAGGGAGACTCTACAACATATGCACATTTTCTGTTCAATGCGTTTGATACGGACCACA
ATGGAGCTGTGAGTTTCG
AGGATTTCATCAAAGGTCTTTCCATTTTGCTCCGGGGGACAGTACAAGAAAAACTCAATTGG
GCATTTAATCTGTATGAT
ATAAATAAAGATGGCTACATCACTAAAGAGGAAATGCTTGATATAATGAAAGCAATATACG
ACATGATGGGTAAATGTAC
ATATCCTGTCCTCAAAGAAGATGCACCCAGACAACACGTCGAAACATTTTTTCAGGCTGTTT
TCCATTGTATCATCAAGT
GGAAGTTCAAGACGGCATCAAACAAAACAAGGATGTTTACAGACATATGCAAAGGGTCAGG
ATATCTATCCTCCAGTATA
TGTTAAtgcttaataacaagtaatcctaacagcattaaaggccaaatctgtcctctttcccctgacttccttacagcatg
tttatattacaagccattcagggacaaagaaaccttgactaccccactgtctactaggaacaaacaaacagcaagcaaaa
ttcactttgaaagcaccagtggttccattacattgacaactactaccaagattcagtagaaaataagtgctcaacaacta
atccagattacaatatgatttagtgcatcataaaattccaacaattcagattatttttaatcatctcagccacaactgta
aagttgccacattactaaagacacacacatcgtccctgttttgtagaaatatcacaaagaccaagaggctacagaaggag
gaaatttgcaactgtctttgcaacaataaatcaggtatctattctggtgtagagataggatgttgaaagctgccctgcta
tcaccagtgtagaaattaagagtagtacaatacatgtacactgaaatttgccatcgcgtgtttgtgtaaactcaatgtgc
acattttgtatttcaaaaagaaaaaataaaagcaaaataaaatgttwawaamwmwaaaaaaaaaaaaaaaa

>monkey KChIP4 C terminal splice variant

MLTLEWESEGLQTVGIVVIICASLKLLHLLGLIDFSEDSVEDELEMATVRHRPEALELLEAQSKFT
KKELQILYRGFKNE
CPSGVVNEETFKEIYSQFFPQGDSTTYAHFLFNAFDTDHNGAVSFEDFIKGLSILLRGTVQEKLNW
AFNLYDINKDGYIT
KEEMLDIMKAIYDMMGKCTYPVLKEDAPRQHVETFFQAVFHCIIKWKFKTASNKTRMFTDICK
GSGYLSSSIC

FIGURE 24

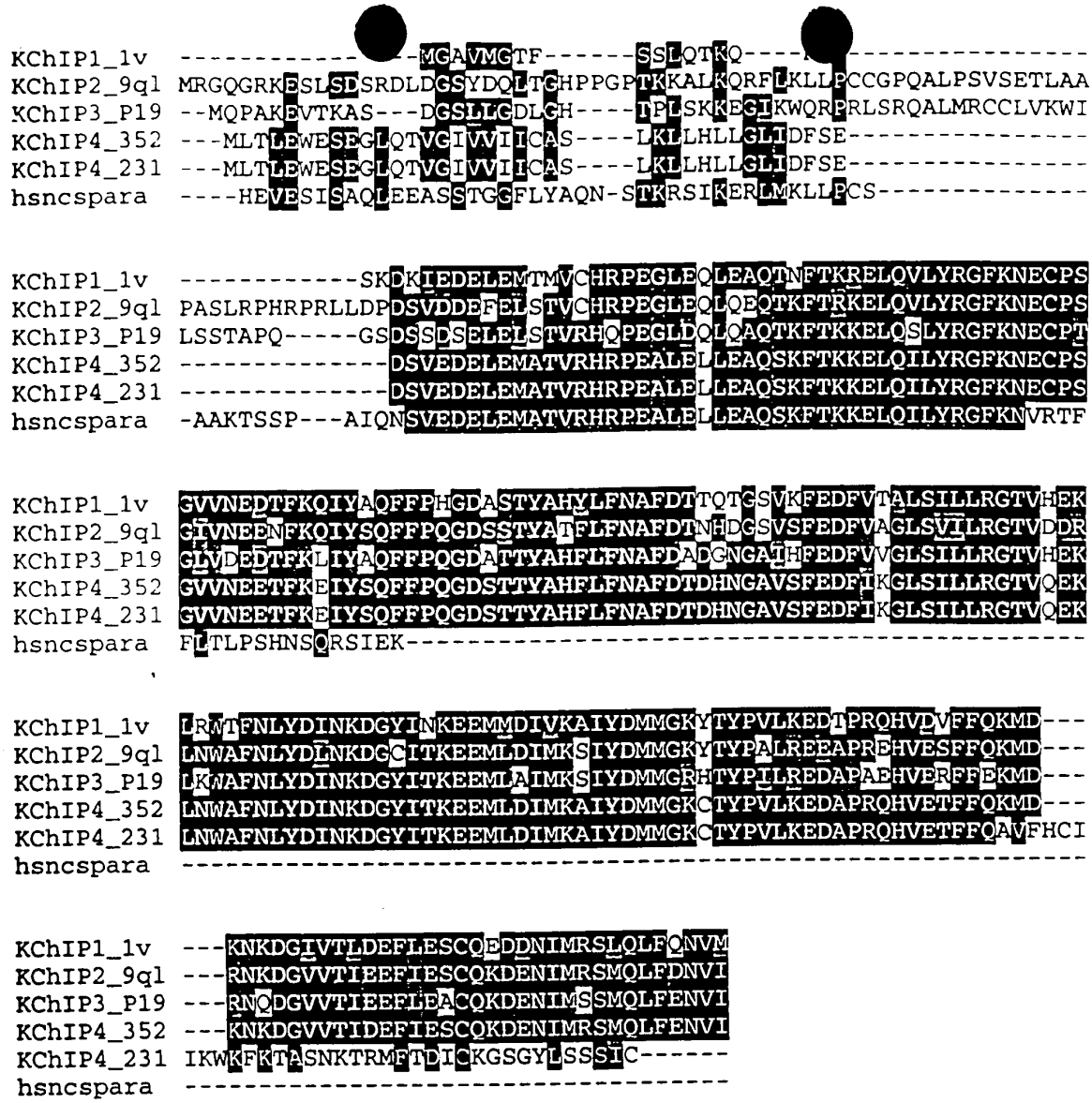

KChIP1_1v
KChIP2_9ql
KChIP3_P19
KChIP4_352
KChIP4_231
hsncspara

FIGURE 25

Rat 33b07 protein

MNGVEGNNELPLANTSTSALVPEDLDLKQDQPLSEETDTVREMEAAGEAGAEGGASPDSEHCEPQLCLRVAENGCAAAAG
EGLEDGLSSSKCGDAPLASVAANDSNKNGCQLAGPLSPAKPKTLEASGAVGLGSQMMPGPKKTKVMTTKGAISATTGKEG
EAGAAMQEKKGVQKEKKAAGGGKDETRPRAPKINNCMDSLEAIDQELSNVNAQADRAFLQLERKFGRMRRLHMQRRSFII
QNIPGFWVTAFRNHPQLSPMISGQDEDMMRYMINLEVEELKHPRAGCKFKFIFQSNPYFRNEGLVKEYERRSSGRVVSLS
TPIRWHRGQEPQAHIHRNREGNTIPSFFNWFSDHSLLEFDRIAEIIKGELWSNPLQYYLMGDGERRGVRVPPRQPVESPR
SFRFQSG.

Rat 33b07 DNA (coding: 85-1308)

GGTGGAGCTAAGCACTCACTGCGGTGCTGCCCTGCGTCTGCAGAGAACAAGGAAAGCTTCTCTGCAGGGCTGTCAGCTGC
CAAAATGAACGGCGTGGAAGGGAACAACGAGCTCCCTCTCGCTAACACCTCGACCTCCGCCCTTGTCCCGGAAGATCTGG
ATCTGAAGCAAGACCAGCCGCTCAGCGAGGAAACTGACACGGTGCGGGAGATGGAGGCTGCAGGTGAGGCCGGTGCGGAG
GGAGGCGCGTCCCCCGATTCGGAGCACTGCGACCCCCAGCTCTGCCTCCGAGTGGCTGAGAATGGCTGTGCTGCCGCAGC
GGGAGAGGGGCTGGAGGATGGTCTGTCTTCATCAAAGTGTGGGGACGCACCCTTGGCGTCTGTGGCAGCCAACGACAGCA
ATAAAAATGGCTGTCAGCTTGCAGGGCCGCTCAGCCCTGCTAAGCCAAAAACTCTGGAAGCCAGTGGTGCAGTGGGCCTG
GGGTCGCAGATGATGCCAGGGCCGAAGAAGACCAAGGTAATGACTACCAAGGGCGCCATCTCTGCGACTACAGGCAAGGA
AGGAGAAGCAGGGGCGGCAATGCAGGAAAAGAAGGGGGTGCAGAAAGAAAAAAAGGCAGCTGGAGGAGGGAAAGACGAGA
CTCGTCCTAGAGCCCCTAAGATCAATAACTGCATGGACTCCCTGGAAGCCATCGATCAAGAGCTGTCAAATGTAAATGCG
CAAGCTGACAGGGCCTTCCTCCAGCTGGAACGCAAATTTGGGCGGATGAGAAGGCTCCACATGCAGCGCCGAAGTTTCAT
CATCCAAAACATCCCAGGTTTCTGGGTCACAGCGTTTCGGAACCACCCGCAACTGTCACCGATGATCAGTGGCCAAGATG
AAGACATGATGAGGTACATGATCAATTTAGAGGTGGAGGAGCTTAAGCACCCAAGAGCAGGGTGCAAATTTAAGTTCATC
TTCCAAAGCAACCCCTACTTCCGAAATGAGGGGCTGGTCAAAGAGTACGAGCGCAGATCCTCAGGTCGAGTGGTGTCGCT
CTCTACGCCAATCCGCTGGCACCGGGGTCAAGAACCCCAGGCCCATATCCACAGGAATAGAGAGGGGAACACGATTCCCA
GTTTCTTCAATTGGTTCTCAGACCACAGCCTCCTAGAATTCGACAGAATAGCTGAAATTATCAAAGGGGAGCTTTGGTCC
AATCCCCTACAATACTACCTGATGGGCGATGGGCCACGCAGAGGAGTTCGAGTCCCACCAAGGCAGCCAGTGGAGAGTCC
CAGGTCCTTCAGGTTCCAGTCTGGCTAAGCTCTGCCCTCGTGAGAAGCTCTTACAGAAGAGTCCTTACCACCTTCTCAGC
TTGGCTAGCAGCATGCAGCCTTCTGTCTGCTTTCTCTTCCTTGGATTGTGTCCTTTGGTTCTTCTAAGTCTCCGGTAGTT
TCAAGGTTGTGGCTTCCAAGTCTTTGCTCTTCTTTCTCTTGGCCATCACGATGTCCTGCATAGTGTTAATGGTGTTCCAA
GTGCATGGCCTCCAAACTGCTTCTATGCCAAGCTCACGTGCTGTAGTTTGTACTGCTTTTCTTTGCATGGCTTGGTTCCT
GTCTGTGATCTTCTAGGTTTTTTGTTTTCTTTTTTAAAAGTGGTTCTCTATCAAAAGAAAGCTTGACATATCCTTACCAA
GAACTAGCCAGATTTCATACTGTGTTCCCGATATCTATGTACTGTGAAGAACTGTGAGTTTCGCCACTGCAAGATGGGAC
TGTATCCCAATCCAGCCATCAGCCCAACAGGACATTCCAAGCTGTCACCAACTGATCCTAGCTGTCTTCCTGGGCCTTTG
CCATTTACCCTGCTTTTTATCTATAGAATGAGCAGGTGGCTGGTAGGTGACTACTAGGTAAGAGTGAAGTATTAGGTGAG
GAGTGTTTTCTGTCACCACATTGTTCTTGTACCAATGCATCATGATCAGCTTGGATCAGCTACTGACTGTCTGATATTTC
TAACCCCCAACACAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA

FIGURE 26

Human 33b7 (106d5) DNA (coding: 88-1332)

GGGGTGGTGCTAGACGTTTCGGGCAGAGCTCGGCCGCTGCGGAGGACAAGGAACTCTCCCTCTCCCACTAGTCTGACTTC
TTCCAAAATGAGCGGCCTGGATGGGGGCAACAAGCTCCCTCTCGCCCAAACCGGCGGCCTGGCTGCTCCCGACCATGCCT
CAGGAGATCCGGACCTAGACCAGTGCCAAGGGCTCCGTGAAGAAACCGAGGCGACACAGGTGATGGCGAACACAGGTGGG
GGCAGCCTGGAGACCGTTGCGGAGGGGGGTGCATCCCAGGATCCTGTCGACTGTGGCCCCGCGCTCCGCGTCCCAGTTGC
CGGGAGTCGCGGCGGTGCAGCGACCAAAGCCGGGCAGGAGGATGCTCCACCTTCTACGAAAGGTCTGGAAGCAGCCTCTG
CCGCCGAGGCTGCTGACAGCAGCCAGAAAAATGGCTGTCAGCTTGGAGAGCCCCGTGGCCCTGCTGGGCAGAAGGCTCTA
GAAGCCTGTGGCGCAGGGGGCTTGGGGTCTCAGATGATACCGGGGAAGAAGGCCAAGGAAGTGACGACTAAAAAACGCGC
CATCTCGGCAGCAGTGGAAAAGGAGGGAGAAGCAGGGGCGGCGATGGAGGAAAAGAAGGTAGTGCAGAAGGAAAAAAAGG
TGGCAGGAGGGGTGAAAGAGGAGACACGGCCCAGGGCCCCGAAGATCAATAACTGCATGGACTCACTGGAGGCCATCGAT
CAAGAGTTGTCAAACGTAAATGCCCAGGCTGACAGGGCCTTCCTTCAGCTTGAGCGCAAGTTTGGCCGCATGCGAAGGCT
CCACATGCAGCGCAGAAGTTTCATTATCCAGAATATCCCAGGTTTCTGGGTTACTGCCTTTCGAAACCACCCCCAGCTGT
CACCTATGATCAGTGGCCAAGATGAAGACATGCTGAGGTACATGATCAATTTGGAGGTGGAGGAGCTTAAACACCCCAGA
GCAGGCTGCAAATTCAAGTTCATCTTTCAGGGCAACCCCTACTTCCGAAATGAGGGGCTTGTCAAGGAATATGAACGCAG
ATCCTCTGGCCGGGTGGTGTCTCTTTCCACTCCAATCCGCTGGCACCGAGGCCAAGACCCCCAGGCTCATATCCACAGAA
ACCGGGAAGGGAACACTATCCCTAGTTTCTTCAACTGGTTTTCAGACCACAGCCTTCTAGAATTCGACAGAATTGCAGAG
ATTATCAAAGGAGAACTGTGGCCCAATCCCCTACAATACTACCTGATGGGTGAAGGGCCCCGTAGAGGAATTCGAGGCCC
ACCAAGGCAGCCAGTGGAGAGCGCCAGATCCTTCAGGTTCCAGTCTGGCTAATCTCTGTCCTGTGAGAAGCTTCTGCACA
AGTTTCCTTACCACCTCCTCTTGGACCTATGCTTGGCCAACAGCATGCAGTCTTCCATCTGCTTTCTCTTCATACTGTGG
ATTATCTTTTCCTTTGGTTCTAAATCTTCAGTAATCGGTTGCAAGATTGTTGGCTTACCTGCCTGTGCCATTCTTCCTCT
GGGCCTTCATGCTTTTCTGCATTGTGTTAACATGTTTCAAGTGCATGGCCTTCTACGGCTTCTATGCCAAGCGTATGATA
CTATAGATATAGTGTACCATACTGCCTTTCTTTGCATGGCTTGGACCCTATCTGTGACCATGCTCTTCTCCCAATTTAAG
TGGTTCTGTACCACAAAGAATCTTGATACATTTTCACAAATAACTGATTGGGCTTCATACTTTATGCTGGCTGTGTCCTG
ATACCCATGTACTTATGGTAAGCTATTTGGGTATTACCACTGCAAGACAAAACTGATATCTTAACCCGGCCATCAACCCA
AATTGGACATTCCAGACTACCACCAACTGGATCCCAGCTGCCTTCCTGGGCTTGTGCCATCCACCCTACTGGTTATCTGA
TAGAACAAGCTGGTGGCTGATGGGTGACTGCTAGGCGTGACTGAGGTAATAGATGAAAAGTGTTCTATGTTATCACATTG
GTTTTCCTGTACCTTTGGTTACTCTACGTCATGACCAGCTGCTGGTGAGTATGAAGCCTGTGCTATAGCCCACCCCTACT
CACTCTCACCTTCTGGTTGAACTTTGCTTAGGCCACCATTGTCTGCCTCATCAGGAACTATCTGTAGACGTAGCTCCCAG
GGAGCTCACAGCAACACCCCCTACCACCAGGATGGGCAGTAATATGTGACAGAGCCCAAAGCAAGGCTGGAACGCAGTCC
CTTCCAGCTTAGTCTTTCTGACTCCTAGCCAACAAACCATCCTTAATGTGAGCAACTTCTTTAGGCATTTCCTCTTTTCC
CCGCCTGCACCCACTCTGAACATGACAAAAGTTGCCAGAGTTGGGGCATTGAGGAAGAGATATTTCTGGAATGTGAGACT
TGTTATGCCTCTGTCTCTTTCTCTCCCTCCCCCTCCCCTCTCCCTCCCCCTCTCCCTCCCATCCCTTTTCTTCCCTTTCA
CTCTGAAGCAGTTTTAGCTTATTAACAGAAAACAAAACTGGCAAAGCAGGCTTTTTGTTTAATTTGCTCTTTCCCTGATT
GTGTTCAGAGAGAAAGGTTATGATTAAATGGGCTCCAGATCTCTTATTGCCCTTATTCCTCCACCCCACTTCTTTTAGCA
AGGTCTGAAAGTTTCAAAGGGAGACCTATAGGTTAATTGTTTAGTTATAGGCAGTGTTAAATTAGGCAGATTTTGACATA
TTTATCTTTTTACCCCATCCATTCTACCAAAACCTGTGTATTTCTTGAGTTTTTAGTTTGAGAAGCTGGAAAGAGAGAGA
AGGGCCTCACAGTGATGGGTTCAGGACGGGTCAAAGGCAAAGGCCTTTGTGATGTGAGCAAAGGCAACCAAAACTTAGCC
TCACTCCACTTTTCTAAAGATGGAAATTCTTTTTTGGGCCTTGGACTGCTTCTAGGGTAGCATTTTGTAGGTCACTCTTC
TCCTTTGTACTATTTTGTTTCTGCCCTGATGTCCCTTGGGTCTCCATCCTACTGCCTGGCTTTCTTGGCCCTCATTTCTC
AGCTTCTGCATTTCCTTCCCTGCTCCTAACAAATGAAGAAGCAGGCTGCAGCCTGCATTGTGGAAGATCTCCAGCCTCCT
TGTAGGGGATAAGGGGATGTGTAGCATCTGTGTGGATTTTCACGGACAAGTTCCAGTAGGTGGGACAGTGATGCCGTCAA
GGCTTAGTTATGATCATGTGTGGTGATAAAGACCATCCACCATCACCCTTTTCCCCTTTGGTTTTGAAGGCCTTGCCCTA
AGCTACCTGAGGGTTTAGGAGGTCTGAACACACACAGTGGAGAGGTTAATCTAGGTTGGGAAACTGAGTAAAAGTCCAGA
GCAGGAATGAGCCTGCTGTGGCGTGGGTTTGGAAAGGCTCACAGGAAAGAACCTGCAGGATCAGGGGTGGGAGGGGAGGC
CCCTGAGGTGCTCTCCAGGGAAGAGGGGCTGGGGTTTAAATAGCATGCTTGGAGGAAGATTTTCCTTCAATTTTTCCTAA
GTCCTTGAATTCACCAGTAGATTTTTGTAAACAAAATGTAAGTCGATGTTTTCTCTCAATTATCCTAGGAGTGACCTTTA
TATGTGTGGAAGATTAATGGTATATGCTCCTTATGTCACTGTTTTTGAGTAAAATCCATTTCCTTTCTCTGTTTCAGCCT
ATGACAAAATTGATGTTTACAGGCCTGCTTTTTGCTTATAATTGACAACATGTGCAAAAATACCAAATTTGTGTCCTGTG
CAGTATGAAGAATTCAGTGAATATTCATTAATGTATTAGCTTGTTTTGCTCTCTGTTCATATATGGCTCTATTCTTAGAA
ATATAATTTGAATGTGATCTTTCAATAGTCTGAATATTTTACAAATTATAGCTATGTCTTGTGAAAATAACCTCAAAAAG
AAAAATACGACTCTGTTGTCTTACTTGATATTTCTTGCCCTAGTAATGTACTTGACATTTATGTTCCTAAGCAGTGTAAG
TACCAGTAGAATTTCTCTGTCAAACTCAATGATCATTTAGTACTTTTGTCTTCTCCCATGTGCTTGAAGGAAAAATAAAG
TGTCACTACCGTATTTCTTGTTTTCATCAAAAAATAAAAATAATTTAAAAAACAAAAAAAAAAAAAAA

Human 33b7 (106d5) protein

MSGLDGGNKLPLAQTGGLAAPDHASGDPDLDQCQGLREETEATQVMANTGGGSLETVAEGGASQDPVDCGPALRVPVAGS
RGGAATKAGQEDAPPSTKGLEAASAAEAADSSQKNGCQLGEPRGPAGQKALEACGAGGLGSQMIPGKKAKEVTTKKRAIS
AAVEKEGEAGAAMEEKKVVQKEKKVAGGVKEETRPRAPKINNCMDSLEAIDQELSNVNAQADRAFLQLERKFGRMRRLHM
QRRSFIIQNIPGFWVTAFRNHPQLSPMISGQDEDMLRYMINLEVEELKHPRAGCKFKFIFQGNPYFRNEGLVKEYERRSS
GRVVSLSTPIRWHRGQDPQAHIHRNREGNTIPSFFNWFSDHSLLEFDRIAEIIKGELWPNPLQYYLMGEGPRRGIRGPPR
QPVESARSFRFQSG

FIGURE 27

Rat lp protein (partial)

LKGARPRVVNSTCSDFNHGSALHIAASNLCLGAAKCLLEHGANPALRNRKGQVPAEVVPDPMDMSLDKAEAALVAKELRT
LLEEAVPLSCTLPKVTLPNYDNVPGNLMLSALGLRLGDRVLLDGQKTGTLRFCGTTEFASGQWVGVELDEPEGKNDGSVG
GVRYFICPPKQGLFASVSKVSKAVDAPPSSVTSTPRTPRMDFSRVTGKGRREHKGKKKSPSSPSLGSLQQREGAKAEVGD
QVLVAGQNRDCAFLWEDRLCSRLLVWH

Rat lp DNA (partial, coding:1-804)

CTGAAAGGGGCGAGGCCCAGGGTGGTGAACTCCACCTGCAGTGACTTCAACCATGGCTCAGCTCTGCACATCGCTGCCTC
GAATCTGTGCCTGGGCGCCGCCAAATGTTTACTGGAGCATGGTGCCAACCCAGCGCTGAGGAATCGAAAAGGACAGGTAC
CAGCGGAAGTGGTCCCAGACCCCATGGACATGTCCCTTGACAAGGCAGAGGCAGCCCTGGTGGCCAAGGAATTGCGGACG
CTGCTAGAAGAGGCTGTGCCACTGTCCTGCACCCTTCCTAAAGTCACACTACCCAACTATGACAACGTCCCAGGCAATCT
CATGCTCAGCGCGCTGGGCCTGCGTCTAGGAGACCGAGTGCTCCTCGATGGCCAGAAGACGGGCACGCTGAGGTTCTGCG
GGACCACCGAGTTCGCCAGTGGCCAGTGGGTGGGCGTGGAGCTAGATGAACCGGAAGGCAAGAACGACGGCAGCGTTGGG
GGTGTCCGGTACTTCATCTGCCCTCCCAAGCAGGGTCTCTTTGCATCTGTGTCCAAGGTCTCCAAGGCAGTGGATGCACC
CCCCTCATCTGTTACCTCCACGCCCCGCACTCCCCGGATGGACTTCTCCCGTGTAACGGGCAAAGGCCGGAGGGAACACA
AAGGGAAGAAGAAGTCCCCATCTTCCCCATCTCTGGGCAGCCTGCAGCAGCGTGAAGGGGCCAAAGCTGAAGTTGGAGAC
CAAGTCCTTGTGGCAGGCCAGAACAGGGATTGTCGCTTTCTATGGGAAGACAGACTTTGCTCCAGGTTACTGGTATGGCA
TTGAACTGGACCAGCCCACGGGCAAGCATGACGGCTCTGTGTTCGGTGTCCGGTACTTTACCTGTGCCCCGAGGCACGGG
GTCTTTGCACCAGCATCTCGTATCCAGAGGATTGGTGGATCCACTGATCCCCCTGGAGACAGTGTTGGAGCAAAAAAAGT
GCATCAAGTGACAATGACACAGCCCAAACGCACCTTCACAACAGTCCGGACCCCAAAGGACATTGCATCAGAGAACTCTA
TCTCCAGGTTACTCTTCTGCTGCTGGTTTCCTTGGATGCTGAGGGCGGAGATGCAGTCTTAGAGACCTGGATACCTGACA
CAGAGACAGAGTCCCCTCTAGCATCTCCTGACACAAGGAGACCCCAGTCACCCTAAGATAGAGATTCCCAGTGACACCTC
CAGAATAGAAACCCCGTTAGCCAGCCCTCGATTACTGAGGTCCCATTATTAACAGATCTCCCATGACGACTCCCCCAAAT
ACAGACCTCATGTTACCCCAAAAGAGATTCCCTGAGTAGCACCTTCAGGCTAGTCCCTGTCCCCTACCCCTCAGAGCAGA
TTTCCCCCAATAAACATTTTCCACATCACCCAAGGGATGCTGACCCTCTCCACGACAGGACGTTCTTGAGTTACCAGTGG
ATTAGAGTCCCATGAATGAAGACCCCCCCCACCCCGGTTCTCCTTAAGCATAGGTCATACCTCCAGAATAGCCAGCCACA
TCACTATCCCCATGTAACATCAGTCTCCTCAAAATGGCGTGAGGTCACTAGAAAGACCTTATACTCTCCTCTCCTTCTCA
GAGATGCCCTCCATTCACTTAAGTCCCTGTTCTCACCCCTGAACAAGACACCTAATTAACCGGCCCACTCACCTCAATTA
CAAACACCAAAATCGTCCTGGAAGCATGAATTACAGGACAGCAAGTCTTCCTGCCCTCTGCACCCTTGAGAAACCCCCAG
TGCCTTGTATGAAGCCCACCCCACATGGCCCACAGTCCCTGTGCTGGCCAAGGCTCCCAGAAAATTCTCTATTTTTTAAA
GTAATAACTTCCCCCCCTTTGGGGGGATCCCCAAATTTGGAGACCCCATTCTAGAACACTGGGGAGTTCAAATTCCAGAG
AGAATATATATTATATATAATCCCCAATTCCCCATGCTTCCAAGCCCTACAATCTCTAGAAGACCCCAAATTTCTAATTC
CCAGGACTTCCCCTACCCAAGTCACAGAATCTTCAAATCCCCAGGGAATCCCAAACTTAAGATACCAATCCCAAACCCTC
AGGAAATCCCCCAACACAAGGTCCTTAGGACCGGGAGGAAGGAACCTGTTGCCAGGAGAACATCCCAGGCTCTCAGGGCA
TCTCAAACCTGACTCCCAGGCACCAGGAGACCCCAAACAGAAAGTCCCATCTTTGGAACAAGGATAGGACTCTAATACCC
TTAGTCCATGGATCTTTAATTTCCCAACCTCCAAACTCCATGGGCCCCACCCTCAAGGGAACCCCCAAGATCCAAATCTC
TGATAACTAATATGTGCAGGGCCCCAGGGCTCTAACAGGACCCCAAATCATGGAGTCCCTACTTCAATCTACCTTCTGGT
CACAGGTCCAAGACACTAAATCTGAGTCATTGGCCCCAAAGGACTTCACAGCACCTGGGCCAGACTAACAGCCTGAGGGA
GAACCTGAGGGCCCCGTGGGTCCAGAGCAGACCTGGGGCCCTGACCACCAAGGACAGCTCACGACTGCCCCTTCACTGCA
TGTCCCTAAACTCAGCATGACTCCTGTCCTCTTCAATAAAGACGTTTCTATGGCAAAAAAAAAAAAAAAAAAAAAAAAAA
AAA

FIGURE 28

Rat 7s Protein (partial)

ADSTSRWAEALREISGRLAEMPADSGYPAYLGARLASFYERAGRVKCLGNPEREGSVSIVGAVSPPGGDFSDPVTSATLG
IVQVFWGLDKKLAQRKHFPSVNWLISYSKYMRALDEYYDKHFTEFVPLRTKAKEILQEEEDLAEIVQLVGKASLAETDKI
TLEVAKLIKDDFLQQNGYTPYDRFCPFYKTVGMLSNMISFYDMARRAVETTAQSDNKITWSIIREHMGEILYKLSSMKFK
DPVKDGEAKIKADYAQLLEDMQNAFRSLED

Rat 7s DNA (partial, coding: 1-813)

GCTGACTCTACCTCTAGATGGGCTGAGGCCCTCAGAGAAATCTCTGGTCGCTTAGCTGAAATGCCTGCAGATAGTGGATA
CCCTGCATACCTTGGTGCCCGACTGGCTTCTTTCTATGAGCGAGCAGGCAGAGTGAAATGTCTTGGAAACCCTGAGAGAG
AAGGGAGTGTCAGCATTGTAGGAGCAGTTTCTCCACCTGGTGGTGATTTTTCTGATCCAGTCACATCTGCTACTCTGGGT
ATTGTTCAGGTGTTCTGGGGCTTGGATAAGAAGCTAGCTCAGCGCAAGCACTTCCCGTCCGTCAACTGGCTCATTAGCTA
CAGCAAGTACATGCGCGCCCTGGACGAGTACTATGACAAACACTTCACAGAGTTCGTGCCTCTGAGGACCAAAGCTAAGG
AGATTCTGCAGGAAGAGGAGGATCTGGCGGAAATCGTGCAGCTCGTGGGAAAGGCGTCTTTAGCAGAGACAGATAAAATC
ACCCTGGAGGTAGCAAAACTTATCAAAGATGACTTCCTACAACAAAATGGGTACACTCCTTATGACAGGTTCTGTCCATT
CTATAAGACGGTGGGGATGCTGTCCAACATGATTTCATTCTATGATATGGCCCGCCGGGCTGTGGAGACCACCGCCCAGA
GTGACAATAAGATCACATGGTCCATTATCCGTGAGCACATGGGGGAGATTCTCTATAAACTTTCCTCCATGAAATTCAAG
GATCCAGTGAAGGATGGCGAGGCAAAGATCAAGGCCGACTACGCACAGCTTCTTGAAGATATGCAGAACGCATTCCGTAG
CCTGGAAGATTAGAACTGTGACTTCTCTCCTCCTCTTCCGCAGCTCATATGTGTATATTTTCCTGAATTTCTCATCTCCA
ACCCTTTGCTTCCATATTGTGCAGCTTTGAGACTAGTGCCTCGTGCGTTCTCGTTCATTTTGCTGTTTCTTTGGTAGGTC
TTATAAAACACACATTCCTGTGCTCCGCTGTCTGAAGGAGCTCCTGACCTTTGTCTGAAGTGGTGAATGTAGTGCATATG
ATACACAGTGTAACATACACATTGTAACATATACGTTCTGTAAACTTGTATGTAAGGTGACTACCCCTTCCCTCCTCTCC
AGTAAACTGTAAACAGGACTACTGCATGTGCTCTATTGGGGATGGAAGGCCAGATCTCCATACCGTGGACAGGTACATAA
GGAAACTAGACCACTTGCAACTTAGTGTTTGTTGAGTAACCATTTTGCAGGAAGTATTTCCATTTAAAAAACAAAAGATT
AATGTTCCAATTATTTGTAGCTTCCCCAGTATCAATCAGGACTGTTTGTGGCGCACTTGGGAACTATTTTGTTTTCCTAA
CAGACGTTTGCAAGGCTGAACGTAATAGATAAATCAGTTCCCTCTGAAAGTGTGAAAGTAAAAAAGAGAGCTAGGTGGTCA
GACTTAAATTGACATCGTCTTGTTTAAGCATATTTTATTTCACTGAGAGATTTAATATCAAGGACTTTTATATACTCAAT
TACTAGGAAATCTTTTTTTAAGTACAATTTAAAAATCATTGAAAATGTGATCCACATCATAGCCATTTTCCTTATATTTA
GTCAGATGAGCTCAGAGTGGGGAGGGTGTGGGTTAGAATACCACAAGGACACGCAGCAGTGCCTGCAGGCAGTGTGGCCG
GGGGCCAGAGCGGCATTGTTTTCACGAGGTACGTGTGTGGCGTGTGTGTTTGCTTGTTGACACTCTGAAAACAGCAAGCT
TACCAGTTCCAGGAAATATTTTGTTTTCTTTCACTGGCTCAGAAAGCTCCTCAAAGTACCTGGTCCCTGAAGCTTCCTAT
CTGTTAATAGAGACGAGAGAGGTTCTTAAATTTAACTGGTGACAAAACAAAAAGAAAAAAAAGATCGATTTTTGTCTTGC
TGTTTTGGTGTGTTTAAATAATAATTCCATATTTGCATAACGAGGCTCGCTTCTGAGAGCTTGGAGATCGTGCTCCCTCT
TCACTCTCCGGGGTGATAATGCTGGCGCCATGCTACCTCTTCAGGAGGGGAAGGGGATTGAACATGGCTAACACTCTCAA
GTACACAAGCGTAACGACAAAGTATTTATTTTAAGCCTTGGTATGTTGTTTAAATTATTAGGTGGTGCATTTCTTATGGT
CTTTTGGGTAGACATAGTATACACTTCAGATGTAATGTGTAAATCCTTGCTAGTGCATGTCTACACGATAGACTGCTATT
CAAGAAGGATATTCTTCCACATAACAATTTAAAAACTATTAAATCAGATATGGATTATGCAATGACTTGTTGAGAGGTGG
ATTAACGGTGCTGCTTAATCAGTTTGCTTCCAATATGGCTTCGTATCCAGAAGCCCTGACTAGTGGAGATGAGAAAGATT
TCAAAACCTGTCTGCCTACACCTACCAGCAACCTAGGCTTGTGATCAGAATGAATGATCCCAAGAAACTACTTGACCAAG
TGTGTTTTGTTGTCCTGGATTTGAGATGTGCGTTCTTCCTCCCTCTGAGACTGTTGATGTATGAGTGTGAAGAAGTTACA
GAAACAACGCTCAGATTTTCACGGTAACTTTCCCTCTGCCCACACTGTAGAGTTTCAGATTGTTCACTGATAGTGCTTCT
TTCGTAAGGATGTGTTAAAATATAGCAGTCTTTTTAAAAGATTATGCAGTTCTCTATTTATTGTGCTGTGCCTGGTCCTA
AGTGCAGCCGGTTAAACAAGTTTCATATGTATTTTTCCAGTGTTAAATCTCATACCTATGCCCTTTGGAAAGCTCCATCC
TGAACAATGAATAGAAGAGGCTATATAAATTGCCTCCTTATCCTTAAGATTTCACTATCTTTATGTTAAGAGTAATGTAT
AATTATTAAAATCTATGAAAAATAAAAAGTGGATTTAAATTAAGAGATC

FIGURE 29

Rat 29x protein

ARLPAPEHARQQPLLSGPEPGSSARVPVPGVASRRQPRGGKPPSGDGLESGPSPRPLLHARGEAGLHRQSGRVPHTGTAY
FADEPTEAQAPGGFCVSPSLLGVRWPACATRTPGSLPLSPPSAQPRTLWPTPPAGPSSRMVARNQVAADNAISPASEPRR
RPEPSSSSSSSSPAAPARPRPCPVVPAPAPGDTHFRTFRSHSDYRRITRTSALLDACGFYWGPLSVHGAHERLRAEPVGT
FLVRDSRQRNCFFALSVKMASGPTSIRVHFQAGRFHLDGSRETFDCLFELLEHYVAAPRRMLGAPLRQRRVRPLQELCRQ
RIVAAVGRENLARIPLNPVLRDYLSSFPFQI

Rat 29x DNA (coding: 433-1071)

GCACGGCTCCCGGCCCCGGAGCATGCGCGACAGCAGCCCCTCCTCtCCGGCCCTGAGCCCGGATCGTCCGCCCGGGTTCC
AGTTCCCGGCGTGGCCAGTAGGCGGCAGCCGCGAGGCGGCAAGCCACCCAGCGGGGACGGCCTGGAGTCGGGCCCCTCTC
CACGCCCCCTTCTCCACGCGCGCGGGGAGGCAGGGCTCCACCGCCAGTCTGGAAGGGTTCCACATACAGGAACGGCCTAC
TTCGCAGATGAGCCCACCGAGGCTCAGGCTCCGGGCGGATTCTGCGTGTCACCCTCGCTCCTTGGGGTCCGCTGGCCGGC
CTGTGCCACCCGGACGCCCGGCTCACTGCCTCTGTCTCCCCCATCAGCGCAGCCCCGGACGCTATGGCCCACCCCTCCAG
CTGGCCCCCTCGAGTAGGATGGTAGCACGTAACCAGGTGGCAGCCGACAATGCGATCTCCCCGGCATCAGAGCCCCGACGG
CGGCCAGAGCCATCCTCGTCCTCGTCTTCGTCCTCGCCGGCGGCCCCGGCGCGTCCCCGGCCCTGCCCGGTGGTCCCGGC
CCCGGCTCCGGGCGACACTCACTTCCGCACCTTCCGCTCCCACTCTGATTACCGGCGCATCACGCGGACCAGCGCTCTCC
TGGACGCCTGCGGCTTCTACTGGGGACCCCTGAGCGTGCATGGGGCGCACGAACGGCTGCGTGCCGAGCCCGTGGGCACC
TTCTTGGTGCGCGACAGTCGCCAGCGGAACTGCTTCTTCGCGCTCAGCGTGAAGATGGCTTCGGGCCCCACGAGCATTCG
TGTGCACTTCCAGGCCGGCCGCTTCCACCTGGACGGCAGCCGCGAGACCTTCGACTGCCTCTTCGAGCTGCTGGAGCACT
ACGTGGCGGCGCCGCCGCATGTTGGGGGCCCCACTGCGCCAGCGCCGCGTGCGGCCGCTGCAGGAGCTGTGTCGCCAG
CGCATCGTGGCCGCCGTGGGTCGCGAGAACCTGGCACGCATCCCTCTTAACCCGGTACTCCGTGACTACCTGAGTTCCTT
CCCCTTCCAGATCTGACCGGCTGCCGCCGTGCCCGCAGCATTAAGTGGGAGCGCCTTATTATTTCTTATTATTAATTATT
ATTATTTTTcTGGAACCACGTGGGAGCCCTCCCCGCCTAGGTCGGAGGGAGTGGGTGTGGAGGGTGAGATGCCTCCCACT
TCTGGCTGGAGACCTTATCCCGCCTCTCGGGGGGCCTCCCCTCCTGGTGCTCCCTCCCGGTCCCCCTGGTTGTAGCAGCT
TGTGTCTGGGGCCAGGACCTGAACTCCACGCCTACCTCTCCATGTTTACATGTTCCCAGTATCTTTGCACAAACCAGGGG
TGGGGGAGGGTCTCTGGCTTCATTTTTCTGCTGTGCAGAATATTCTATTTTATATTTTTACATCCAGTTTAGATAATAAA
CTTTATTATGAAAGTTTTTTTTTTAAAGAAAAAAAAAAAAAAAAAAAAA

FIGURE 30

Rat 25r DNA (coding 130[redacted])

GGCACGGCTCCCGGCCCCGGAGCATGCGCGACAGCAGCCCCGGAACCCCCAGCCGCGGCGCCCCGCGTCCCGCCGCCAGC
GCAGCCCCGGACGCTATGGCCCACCCCTCCAGCTGGCCCCTCGAGTAGGATGGTAGCACGTAACCAGGTGGCAGCCGACA
ATGCGATCTCCCCGGCATCAGAGCCCCGACGGCGGCCAGAGCCATCCTCGTCCTCGTCTTCGTCCTCGCCGGCGGCCCCG
GCGCGTCCCCGGCCCTGCCCGGTGGTCCCGGCCCCGGCTCCGGGCGACACTCACTTCCGCACCTTCCGCTCCCACTCTGA
TTACCGGCGCATCACGCGGACCAGCGCTCTCCTGGACGCCTGCGGCTTCTACTGGGGACCCCTGAGCGTGCATGGGGCGC
ACGAACGGCTGCGTGCCGAGCCCGTGGGCACCTTCTTGGTGCGCGACAGTCGCCAGCGGAACTGCTTCTTCGCGCTCAGC
GTGAAGATGGCTTCGCCCCCCCACGAGCATTCGTGTGCACTTCCAGGCCGGCCGCTTCCACCTGGACGGCAGCCGCGAGAC
CTTCGACTGCCTCTTCGAGCTGCTGGAGCACTACGTGGCGGCGCCGCGCCGCATGTTGGGGGCCCCACTGCGCCAGCGCC
GCGTGCGGCCGCTGCAGGAGCTGTGTCGCCAGCGCATCGTGGCCGCCGTGGGTCGCGAGAACCTGGCACGCATCCCTCTT
AACCCGGTACTCCGTGACTACCTGAGTTCCTTCCCCTTCCAGATCTGACCGGCTGCCGCCGTGCCCGCAGCATTAAGTGG
GAGCGCCTTATTATTTCTTATTATTAATTATTATTATTTTTCTGGAACCACGTGGGAGCCCTCCCCGCCTAGGTCGGAGG
GAGTGGGTGTGGAGGGTGAGATGCCTCCCACTTCTGGCTGGAGACCTTATCCCGCCTCTCGGGGGGCCTCCCCTCCTGGT
GCTCCCTCCCGGTCCCCCTGGTTGTAGCAGCTTGTGTCTGGGGCCAGGACCTGAACTCCACGCCTACCTCTCCATGTTTA
CATGTTCCCAGTATCTTTGCACAAACCAGGGGTGGGGGAGGGTCTCTGGCTTCATTTTTCTGCTGTGCAGAATATTCTAT
TTTATATTTTTACATCCAGTTTAGATAATAAACTTTATTATGAAAGTTTTTTTTTTAAAAAAAAAAAAAAAAAAA

FIGURE 31

Rat 5p protein
MPSQMEHAMETMMLTFHRFAGEKNYEAKEDLRVLMEREFPGFLENQKDPLAVDKIMKDLDQVRDGKVGFQSFLSLVAGLI
IACNDYFVVHMKQKK

Rat 5p DNA (coding: 52-339)
CTTCCAAAGACTGCAGCGCCTCAGGGCCCAGGTTTCAACAGATTCTTCAAAATGCCATCCCAAATGGAGCATGCCATGGA
AACCATGATGCTTACATTTCACAGGTTTGCAGGGGAAAAAAAACTACTTGACAAAGGAGGACCTGAGAGTGCTCATGGAAA
CCGACTTCCCTCGCTTTTTCGAAAATCAAAAGCACCCTCTCCCTCTCCACAAAATAATCAAAGACCTGCACCACTCCCCA
GATGGAAAAGTGGGCTTCCAGAGCTTTCTATCACTAGTGGCGGGGCTCATCATTGCATGCAATGACTATTTTGTAGTACA
CATGAAGCAGAAGAAGTAGGCCAACTGGAGCCCTGGTACCCACACCTTGATGCGTCCTCTCCCATGGGGTCAACTGAGGA
ATCTGCCCCACTGCTTCCTGTGAGCAGATCAGGACCCTTAGGAAATGTGCAAATAACATCCAACTCCAATTCGACAAGCA
GAGAAAGAAAAGTTAATCCAATGACAGAGGAGCTTTCGAGTTTTATATTGTTTGCATCCGGTTGCCCTCAATAAAGAAAG
TCTTTTTTTTTTAAGTTCCGAAAAAAAAAAAAAAAAAAAAAA

FIGURE 32

Rat 7q protein

MAYAYLFKYIIIGDTGVGKSCLLLQFTDKRFQPVHDLTIGVEFGARMITIDGKQIKLQIWDTAGQESFRSITRSYYRGAA
GALLVYDITRRDTFNHLTTWLEDARQHSNSNMVIMLIGNKSDLESRREVKKEEGEAFAREHGLIFMETSAKTASNVEEAF
INTAKEIYEKIQEGVFDINNEANGIKIGPQHAATNASHGGNQGGQQAGGGCC

Rat 7q DNA (coding 1-639)

ATGGCGTACGCCTATCTCTTCAAGTACATCATCATCGGCGACACAGGTGTTGGTAAATCGTGCTTATTGCTACAGTTTAC
AGACAAGAGGTTTCAGCCGGTGCATGACCTCACAATTGGTGTAGAGTTTGGTGCTCGAATGATAACCATTGATGGGAAAC
AGATAAAACTCCAGATCTGGGATACAGCAGGGCAGGAGTCCTTTCGTTCTATCACAAGGTCATATTACAGAGGTGCAGCG
GGGGCTTTACTAGTGTATGATATTACAAGGAGAGACACGTTCAACCACTTGACAACCTGGTTAGAAGACGCCCGTCAGCA
TTCCAATTCCAACATGGTCATCATGCTTATTGGAAATAAAAGTGACTTAGAATCTAGGAGAGAAGTGAAAAAGGAAGAAG
GTGAAGCTTTTGCACGAGAGCATGGACTTATCTTCATGGAAACTTCTGCCAAGACTGCTTCTAATGTAGAGGAGGCATTT
ATTAACACAGCAAAAGAAATTTATGAAAAAATCCAAGAAGGGGTCTTTGACATTAATAATGAGGCAAACGGCATCAAAAT
TGGCCCTCAGCATGCTGCTACCAATGCATCTCACGGAGGCAACCAAGGAGGGCAGCAGGCAGGGGGAGGCTGCTGCTGA

FIGURE 33

Rat 19r protein

MVLLKEYRVILFVSVDEYQVGQLYSVAEASKNETGGGEGVEVLVNEPYEKDDGEKGQYTHKIYHLQSKVPTFVRMLAPEG
ALNIHEKAWNAYPYCRTVITNEYMKEDFLIKIETWHKPDLGTQENVHKLEPEAWKHVEAIYIDIADRSQVLSKDYKAEED
PAKFKSIKTGRGPLGPNWKQELVNQKDCPYMCAYKLVTVKFKWWGLQNKVENFIHKQEKRLFTNFHRQLFCWLDKWVDLT
MDDIRRMEEETKRQLDEMRQKDPVKGMTADD

Rat 19r DNA (coding 1-816)

ATGGTGCTGCTCAAGGAATATCGGGTCATCCTGCCTGTGTCTGTAGATGAGTATCAAGTGGGGCAGCTGTACTCTGTGGC
TGAAGCCAGTAAAAATGAAACTGGTGGTGGGGAAGGTGTGGAGGTCCTGGTGAACGAGCCCTACGAGAAGGATGATGGCG
AGAAAGGCCAGTACACACACAAGATCTACCACTTACAGAGCAAAGTTCCCACGTTTGTTCGAATGCTGGCCCCAGAAGGC
GCCCTGAATATACATGAGAAAGCCTGGAATGCCTACCCTTACTGCAGAACCGTTATTACAAATGAGTACATGAAGGAAGA
CTTTCTCATTAAAATTGAAACCTGGCACAAGCCAGACCTTGGCACCCAGGAGAATGTGCATAAACTGGAGCCTGAGGCAT
GGAAACATGTGGAAGCTATATATATAGACATCGCTGATCGAAGCCAAGTACTTAGCAAGGATTACAAGGCAGAGGAAGAC
CCAGCAAAATTTAAATCTATCAAAACAGGACGAGGACCATTGGGCCCGAATTGGAAGCAAGAACTTGTCAATCAGAAGGA
CTGCCCATATATGTGTGCATACAAACTGGTTACTGTCAAGTTCAAGTGGTGGGGCTTGCAGAACAAAGTGGAAAACTTTA
TACATAAGCAAGAGAAGCGTCTGTTTACAAACTTTCACAGGCAGCTGTTCTGTTGGCTTGATAAATGGGTTGATCTGACT
ATGGATGACATTCGGAGGATGGAAGAAGAGACGAAGAGACAGCTGGATGAGATGAGACAAAAGGACCCCGTGAAAGGAAT
GACAGCAGATGACTAG

FIGURE 34

Monkey KChIP4c (jlkxa053c02) DNA sequence (CD: 122-811)

CGCTCTCCTCCTCCCCTTTCTCTAGCAGTAGCCTTCTTAATGTAGTTTAATGGCTTTACAAAGAAAGCCAGGCAGAGGAG
CACTTCTCAGTGGCTGTGGTCGGACCATGACCTAGCTGACCATGAACTTGGAAGGGCTTGAAATGATAGCAGTTCTGATC
GTCATTGTGCTTTTTGTTAAATTATTGGAACAGTTTGGGCTGATTGAAGCAGGTTTAGAAGACAGCCTGGAAGATGAACT
GGAGATGGCCACTGTCAGGCATCGGCCTGAGGCCCTTGAGCTTCTGGAAGCCCAGAGCAAATTTACCAAGAAAGAGCTTC
AGATCCTTTACAGAGGATTTAAGAACGAATGCCCCAGTGGTGTTGTTAATGAAGAAACCTTCAAAGAGATTTACTCGCAG
TTCTTTCCACAGGGAGACTCTACAACATATGCACATTTTCTGTTCAATGCGTTTGATACGGACCACAATGGAGCTGTGAG
TTTCGAGGATTTCATCAAAGGTCTTTCCATTTTGCTCCGGGGGACAGTACAAGAAAAACTCAATTGGGCATTTAATCTGT
ATGATATAAATAAAGATGGCTACATCACTAAAGAGGAAATGCTTGATATAATGAAAGCAATATACGACATGATGGGTAAA
TGTACATATCCTGTCCTCAAAGAAGATGCACCCAGACAACACGTCGAAACATTTTTTCAGAAAATGGACAAAAATAAAGA
TGGGGTTGTTACCATAGATGAGTTCATTGAAAGCTGCCAAAAAGATGAAAACATAATGCGCTCCATGCAGCTCTTTGAAA
ATGTGATTTAACTTGTCAACTAGATCCTGAATCCAACAGACAAATGTGAACTATTCTACCACCCTTAAAGTCGGAGCTAC
CACTTTTAGCATAGATTGCTCAGCTTGACACTGAAGCATATTATGCAAACAAGCTTTGTTTTAATATAAAGCAATCCCCA
AAAGATTTGAGTTTCTCAGTTATAAATTTGCATCCTTTCCATAATGCCACTGAGTTCATGGGATGTTCTAACTCATTTCA
TACTCTGTGAATATTCAAAAGTAATAGAATCTGGCATATAGTTTTATTGATTCCTTAGCCATGGGATTATTGAGGCTTTC
ACATATCAGTGATTTTAAAATACCAGTGTTTTTTGCTACTCATTTGTATGTATTCAGTCCTAGGATTTTGAATGGTTTTC
TAATATACTGACATCTGCATTTAATTTCCAGAAATTAAATTAATTTTCATGTCTGAATGCTGTAATTCCATTTATATACT
TTAAGTAAACAAATAAGATTACTACAATTAAACACATAGTTCCAGTTTCTATGGCCTTCACTTCCCACCTTCTATTAGAA
ATTAATTTTATCTGGTATTTTTAAACATTTAAAAATTTATCATCAGATATCAGCATATGCCTAATTATGCCTAATGAAAC
TTAATAAGCATTTAATTTTCCATCATACATTATAGTCAAGGCCTATATACTATATATAATTTTGGATTTGTTTAATCTTA
CAGGCTGTTTTCCATTGTATCATCAAGTGGAAGTTCAAGACGGCATCAAACAAAACAAGGATGTTTACAGACATATGCAA
AGGGTCAGGATATCTATCCTCCAGTATATGTTAATGCTTAATAACAAGTAATCCTAACAGCATTAAAGGCCAAATCTGTC
CTCTTTCCCCTGACTTCCTTACAGCATGTTTATATTACAAGCCATTCAGGGACAAAGAAACCTTGACTACCCCACTGTCT
ACTAGGAACAAACAAACAGCAAGCAAAATTCACTTTGAAAGCACCAGTGGTTCCATTACATTGACAACTACTACCAAGAT
TCAGTAGAAAATAAGTGCTCAACAACTAATCCAGATTACAATATGATTTAGTGCATCATAAAATTCCAACAATTCAGATT
ATTTTTAATCACCTCAGCCACAACTGTAAAGTTGCCACATTACTAAAGACACACACATCGTCCCTGTTTTGTAGAAATAT
CACAAAGACCAAGAGGCTACAGAAGGAGGAAATTTGCAACTGTCTTTGCAACAATAAATCAGGTATCTATTCTGGTGTAG
AGATAGGATGTTGAAAGCTGCCCTGCTATCACCAGTGTAGAAATTAAGAGTAGTACAATACATGTACACTGAAATTTGCC
ATCGCGTGTTTGTGTAAACTCAATGTGCACATTTTGTATTTCAAAAAGAAAAAAATAAAAGCAAAATAAAATGTTTATAAC
TCTAAAAAAAAAAAAAAAAAAAAA

Monkey KChIP4c protein sequence

MNLEGLEMIAVLIVIVLFVKLLEQFGLIEAGLEDSVEDELEMATVRHRPEALELLEAQSKFTKKELQILYRGFKNECPSG
VVNEETFKEIYSQFFPQGDSTTYAHFLFNAFDTDHNGAVSFEDFIKGLSILLRGTVQEKLNWAFNLYDINKDGYITKEEM
LDIMKAIYDMMGKCTYPVLKEDAPRQHVETFFQKMDKNKDGVVTIDEFIESCQKDENIMRSMQLFENVI.

FIGURE 35

Monkey KChIP4d (jlkx015b10) DNA sequence (Clone 5'6)

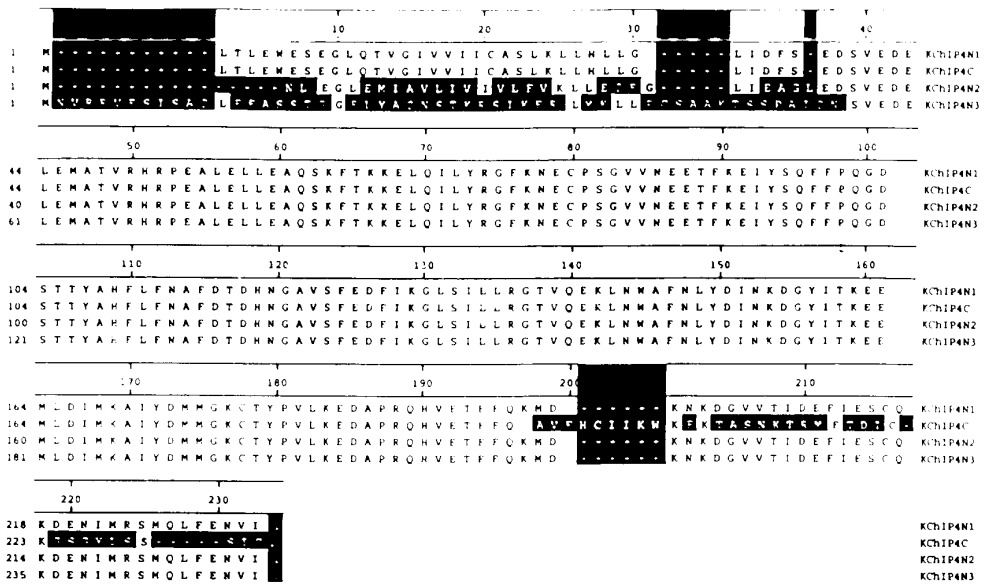
GTCGACAGACGCCCCTGGCCGGTGGACTCCTGAGTCTTACTCCTGCACCCTGCGTCCCCAGACATGAATGTGAGGAGAGT
GGAAAGCATTTCGGCTCAGCTGGAGGAGGCCAGCTCCACAGGCGGTTTCCTGTATGCTCAGAACAGCACCAAGCGCAGCA
TTAAAGAGCGGCTCATGAAGCTCTTGCCCTGCTCAGCTGCCAAAACATCGTCTCCTGCTATTCAAAACAGCGTGGAAGAT
GAACTGGAGATGGCCACTGTCAGGCATCGGCCTGAGGCCCTTGAGCTTCTGGAAGCCCAGCAAATTTAGCAACAAAGA
GCTTCAGATCCTTTACAGAGGATTTAAGAACGAATGCCCCAGTGGTGTTGTTAATGAAGAAACCTTCAAAGAGATTTACT
CGCAGTTCTTTCCACAGGGAGACTCTACAACATATGCACATTTTCTGTTCAATGCGTTTGATACGGACCACAATGGAGCT
GTGAGTTTCGAGGATTTCATCAAAGGTCTTTCCATTTTGCTCCGGGGGACAGTACAAGAAAAACTCAATTGGGCATTTAA
TCTGTATGATATAAATAAAGATGGCTACATCACTAAAGAGGAAATGCTTGATATAATGAAAGCAATATACGACATGATGG
GTAAATGTACATATCCTGTCCTCAAAGAAGATGCACCCAGACAACACGTCGAAACATTTTTTCAGAAAATGGACAAAAAT
AAAGATGGGGTTGTTACCATAGATGAGTTCATTGAAAGCTGCCAAAAAGATGAAAACATAATGCGCTCCATGCAGCTCTT
TGAAAATGTGATTTAACTTGTCAACTAGATCCTGAATCCAACAGACAAATGTGAACTATTCTACCACCCTTAAAGTCGGA
GCTACCACTTTTAGCATAGATTGCTCAGCTTGACACTGAAGCATATTATGCAAACAAGCTTTGTTTTAATATAAAGCAAT
CCCCAAAAGATTTGAGTTTCTCAGTTATAAATTTGCATCCTTTCCATAATGCCACTGAGTTCATGGGATGTTCTGACTCA
TTTCATACTCTGTGAATATTCAAAAGTAATAGAATCTGGCATATAGTTTTATTGATTCCTTAGCCATGGGATTATTGAGG
CTTTCACATATCAGTGATTTTAAAATACCAGTGTTTTTTGCTACTCATTTGTATGTATTCAGTCCTAGGATTTTGAATGG
TTTTCTAATATACTGACATCTGCATTTAATTTCCAGAAATTAAATTAATTTTCATGTCTGAATGCTGTAATTCCATTTAT
ATACTTTAAGTAAACAAATAAGATTACTACAATTAAACACATAGTTCCAGTTTCTATGGCCTTCACTTCCCACCTTCTAT
TAGAAATTAATTTTATCTGGTATTTTTAAACATTTAAAAATTTATCATCAGATATCAGCATATGCCTAATTATGCCTAAT
GAAACTTAATAAGCATTTAATTTTCCATCATACATTATAGTCAAGGCCTATATACTATATATAATTTTGGATTTGTTTAA
TCTTACAGGCTGTTTTCCATTGTATCATCAAGTGGAAGTTCAAGACGGCATCAAACAAAACAAGGATGTTTACAGACATA
TGCAAAGGGTCAGGATATCTATCCTCCAGTATATGTTAATGCTTAATAACAAGTAATCCTAACAGCATTAAAGGCCAAAT
CTGTCCTCTTTCCCCTGACTTCCTTACAGCATGTTTATATTACAAGCCATTCAGGGACAAAGAAACCTTGACTACCCCAC
TGTCTACTAGGAACAAACAAACAGCAAGCAAAATTCACTTTGAAAGCACCAGTGGTTCCATTACATTGACAACTACTACC
AAGATTCAGTAGAAAATAAGTGCTCAACAACTAATCCAGATTACAATATGATTTAGTGCATCATAAAATTCCAACAATTC
AGATTATTTTTAATCACCTCAGCCACAACTGTAAAGTTGCCACATTACTAAAGACACACACATCGTCCCTGTTTTGTAGA
AATATCACAAAGACCAAGAGGCTACAGAAGGAGGAAATTTGCAACTGTCTTTGCAACAATAAATCAGGTATCTATTCTGG
TGTAGAGATAGGATGTTGAAAGCTGCCCTGCTATCACCAGTGTAGAAATTAAGAGTAGTACAATACATGTACACTGAAAT
TTGCCATCGCGTGTTTGTGTAAACTCAATGTGCACATTTTGTATTTCAAAAAGAAAAAATAAAAGCAAAATAAAATGTTA
AAAAAAAAAAAAAAAAAAA

Monkey KChIP4d protein sequence

MNVRRVESISAQLEEASSTGGFLYAQNSTKRSIKERLMKLLPCSAAKTSSPAIQNSVEDELEMATVRHRPEALELLEAQS
KFTKKELQILYRGFKNECPSGVVNEETFKEIYSQFFPQGDSTTYAHFLFNAFDTDHNGAVSFEDFIKGLSILLRGTVQEK
LNWAFNLYDINKDGYITKEEMLDIMKAIYDMMGKCTYPVLKEDAPRQHVETFFQKMDKNKDGVVTIDEFIESCQKDENIM
RSMQLFENVI.

FIGURE 36

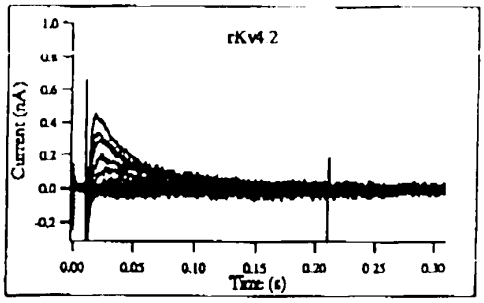
Alignment of monkey KChIP4

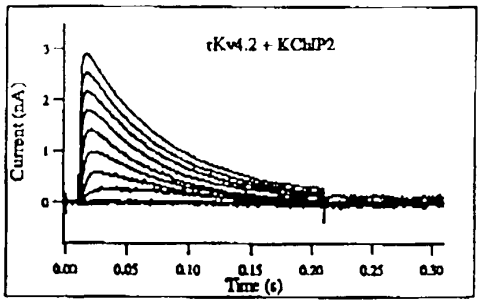


Decoration 'Decoration #1': Shade (with solid black) residues that differ from KChIP4N1.

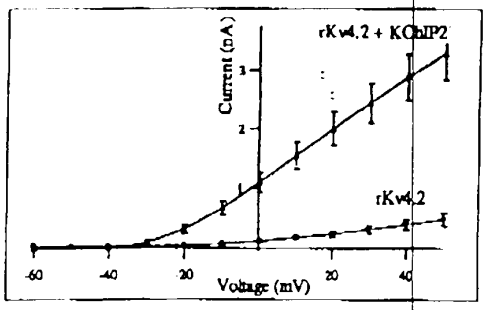
FIGURE 37

KChIP2 Expression Alters Kv4.2 Current





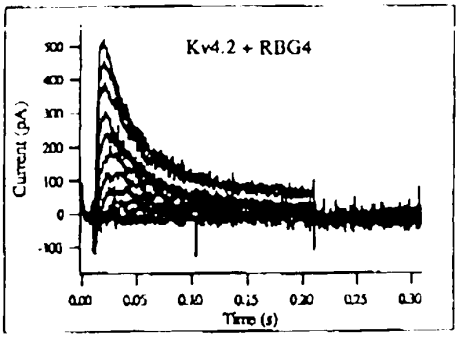
Voltage-Dependence

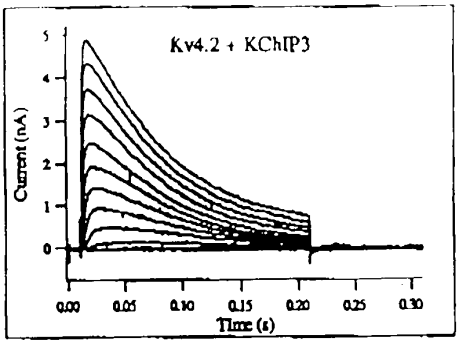


Current Parameter	CHO	
	rKv4.2	rKv4.2 +KChIP2
Peak Current (nA/cell, at 50 mV)	0.51 ± 0.098	3.3 ± 0.45
Peak Current Density (pA/pF, at 50 mV)	18.6 ± 2.8	196.6 ± 26.6
Inactivation time constant (ms, at 50 mV)	28.47 ± 3.5	95.14 ± 8.3
Recovery from Inactivation time constant (ms, at -80 mV)	257.9	49.5
Activation $V_{1/2}$ (mV)	20.5	-2.2
Steady-state Inactivation $V_{1/2}$ (mV)	-47.1	-45.7

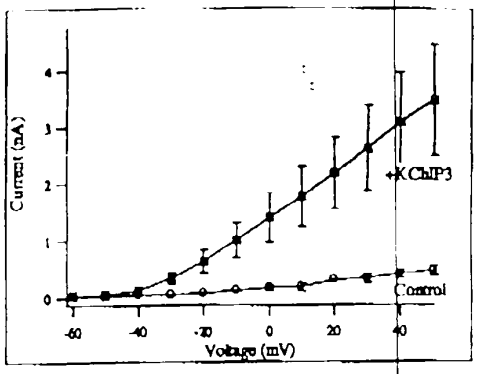
FIGURE 38

KChIP3 Expression Alters Kv4.2 Current





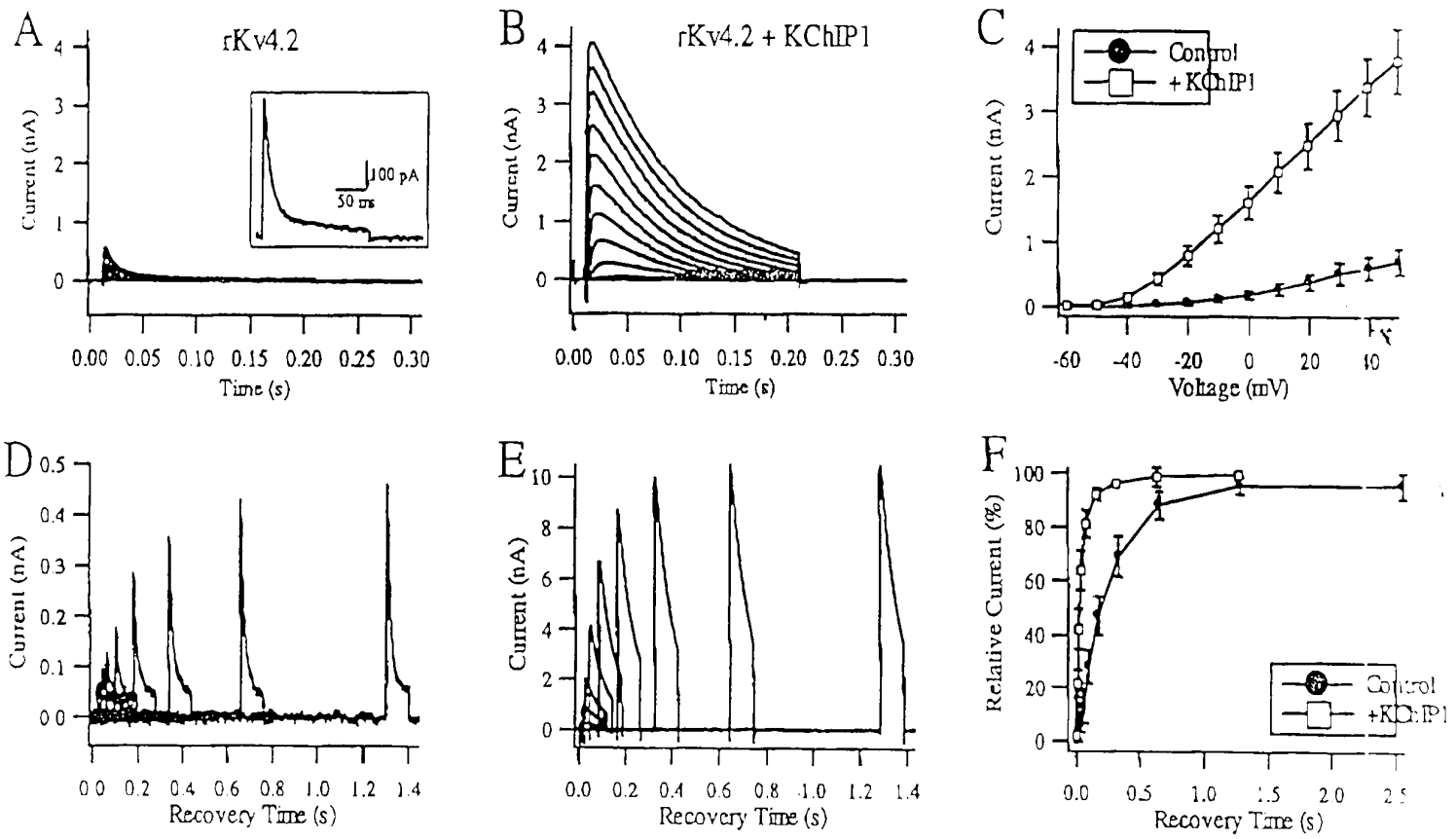
Voltage Dependence



Current Parameter	CHO	
	rKv4.2 +RBG4	**rKv4.2 +KChIP3**
Peak Current (nA/cell, at 50 mV)	**0.46** ± 0.084	**3.5** ± 0.99
Peak Current Density (pA/pF, at 50 mV)	**29.7** ± 11.2	**161.7** ± 21.8
Inactivation time constant (ms, at 50 mV)	**29.5** ± 9.5	**67.2** ± 14.1
Recovery from Inactivation time constant (ms, at -80 mV)	**435.9**	**130.8**
Activation $V_{1/2}$ (mV)	**4.1**	**6.1**

FIGURE 39

FIGURE 4D


A
rKv4.2
Current (nA)
100 pA
50 ms
Time (s)
B
rKv4.2 + KChIP1
Current (nA)
Time (s)
C
Control
+KChIP1
Current (nA)
Voltage (mV)
D
Current (nA)
Recovery Time (s)
E
Current (nA)
Recovery Time (s)
F
Relative Current (%)
Control
+KChIP1
Recovery Time (s)

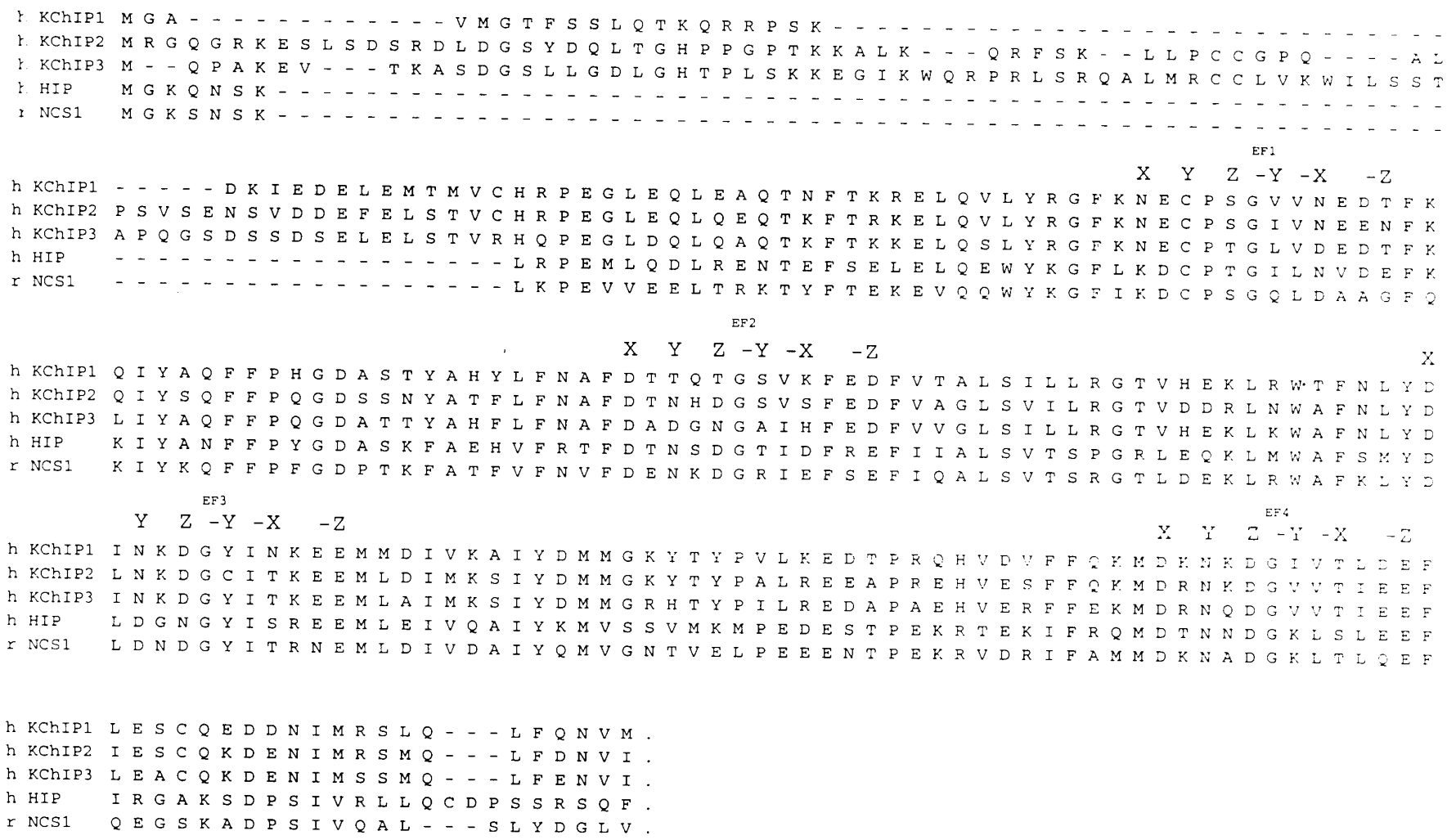

h KChIP1 MGA-----------VMGTFSSLQTKQRRPSK----------
h KChIP2 MRGQGRKESLSDSRDLDGSYDQLTGHPPGPTKKALK---QRFSK--LLPCCGPQ----AL
h KChIP3 M--QPAKEV---TKASDGSLLGDLGHTPLSKKEGIKWQRPRLSRQALMRCCLVKWILSST
h HIP MGKQNSK----------
r NCS1 MGKSNSK----------
EF1
X Y Z -Y -X -Z
h KChIP1 -----DKIEDELEMTMVCHRPEGLEQLEAQTNFTKRELQVLYRGFKNECPSGVVNEDTFK
h KChIP2 PSVSENSVDDEFELSTVCHRPEGLEQLQEQTKFTRKELQVLYRGFKNECPSGIVNEENFK
h KChIP3 APQGSDSSDSELELSTVRHQPEGLDQLQAQTKFTKKELQSLYRGFKNECPTGLVDEDTFK
h HIP ----------LRPEMLQDLRENTEFSELELQEWYKGFLKDCPTGILNVDEFK
r NCS1 ----------LKPEVVEELTRKTYFTEKEVQQWYKGFIKDCPSGQLDAAGFQ
EF2
X Y Z -Y -X -Z
X
h KChIP1 QIYAQFFPHGDASTYAHYLFNAFDTTQTGSVKFEDFVTALSILLRGTVHEKLRWTFNLYD
h KChIP2 QIYSQFFPQGDSSNYATFLFNAFDTNHDGSVSFEDFVAGLSVILRGTVDDRLNWAFNLYD
h KChIP3 LIYAQFFPQGDATTYAHFLFNAFDADGNGAIHFEDFVVGLSILLRGTVHEKLKWAFNLYD
h HIP KIYANFFPYGDASKFAEHVFRTFDTNSDGTIDFREFIIALSVTSPGRLEQKLMWAFSMYD
r NCS1 KIYKQFFPFGDPTKFATFVFNVFDENKDGRIEFSEFIQALSVTSRGTLDEKLRWAFKLYD
EF3
Y Z -Y -X -Z
EF4
X Y Z -Y -X -Z
h KChIP1 INKDGYINKEEMMDIVKAIYDMMGKYTYPVLKEDTPRQHVDVFFQKMDKNKDGIVTLDEF
h KChIP2 LNKDGCITKEEMLDIMKSIYDMMGKYTYPALREEAPREHVESFFQKMDRNKDGVVTIEEF
h KChIP3 INKDGYITKEEMLAIMKSIYDMMGRHTYPILREDAPAEHVERFFEKMDRNQDGVVTIEEF
h HIP LDGNGYISREEMLEIVQAIYKMVSSVMKMPEDESTPEKRTEKIFRQMDTNNDGKLSLEEF
r NCS1 LDNDGYITRNEMLDIVDAIYQMVGNTVELPEEENTPEKRVDRIFAMMDKNADGKLTLQEF
h KChIP1 LESCQEDDNIMRSLQ---LFQNVM.
h KChIP2 IESCQKDENIMRSMQ---LFDNVI.
h KChIP3 LEACQKDENIMSSMQ---LFENVI.
h HIP IRGAKSDPSIVRLLQCDPSSRSQF.
r NCS1 QEGSKADPSIVQAL---SLYDGLV.

FIGURE 41